- - - Index to Contents, October, 1936 - - -

The Annual Index appears on the last eight pages of the December issue of each year

Airports
Airport Location and City Planning..... 17

Building-Codes
Building-Code Survey, New Jersey..... 52

Buildings, Public
The New Memorial Building in Hibbing.. 81

Business Machines
In Old New England..... 7

City Manager Government
Assistants for City Managers..... 89
Recent City Manager Appointments..... 91

Civil Service
Civil Service on Every Front..... 91

Conventions
When and Where..... 105

Finance and Taxation
Maine Voters Pass Anti-Diversion Bill..... 50
Is Overall Tax-Limitation Sound Fiscal Policy? 55
City Planning and Assessment Administration 64
Checking Tax Evasions and Exemptions.... 89
Transportation for Municipal Employees... 89
The Municipal Bond Market..... 91
Recreation Service Costs Compared..... 95

Fire Prevention and Control
Good Cable 7

Flood Control
Are Flood Lessons Learned?..... 7
Playground Project—Flood Control..... 53

Forward Steps
Items Contributed by Officials and Others.. 77

Government and Administration
Mayor LaGuardia on "The New Way of Living" 5
Joint Action Among Local Governments.... 71
Letters to the Citizens..... 77

House Numbering
4-Inch House Numbers for Buffalo, N. Y... 7

Housing
Techwood Homes Is a Working Reality.... 58
Lectures on Contemporary Housing..... 64
Overcrowded Housing Facilities..... 91

Improving Municipal Administration
Items from Public Administration Clearing House 89

Legal Decisions
The City's Legal Rights and Duties..... 99

Liability
Public Liability for Motor Accidents..... 66

Memorials
The New Memorial Building in Hibbing.. 81

Mosquito Eradication
WPA Workers Fight Mosquitoes..... 51

Motor Equipment
Tractor and Sidewalk Plow, Newton, Mass.. 13
Diesel Auto Patrol, Bagdad..... 17
Light Truck Hauls 20 Tons on Test Run.. 111
New Six-Wheeler Chassis..... 113

News and Illustrations
Hints for Officials..... 107

Outdoor Lighting
Safety Aspects of Street and Highway Lighting 5
I. E. S. Highlights 115
Biggest Installation, Mercury Incandescents 119
Headlights and Fixed Lights..... 119
Public Demand Needed for Much Better Light 119

Parks and Recreation
Public Rights in Navigable Streams..... 53
Playground Project Provides Flood Control. 53
Popularity of Long Island State Parks.... 56
Civilizing Hallowe'en 77
Rustic Stone Picnic Shelter House..... 79
Lagoon Theater in Burnham Park, Chicago. 81
Recreation Service Costs Compared..... 95

Planning
Sir Raymond Unwin at Columbia University 5
Airport Location and City Planning..... 17
State Planning Board Makes Building-Code Survey 52
Value of City Planning to Assessment Administration 64
The Highway as a Part of the Landscape.. 93
Zoning and Planning Notes..... 97

Police
Universal Police Training Now Possible.... 5
Small Cities Going to Radio..... 15
Catching Auto Thieves..... 15
Marijuana Crop Destroyed in New York City 15
A Three-Way Hand Grenade..... 107

Power Plants
Austin Utilities Earned $165,397 in Last Fiscal Year 54

VOL. LI No. 10 — OCTOBER 1936

The American City

Issued Monthly by the

American City Magazine Corporation
470 Fourth Ave., New York

EDGAR J. BUTTENHEIM, Pres. & Mgr.
HAROLD S. BUTTENHEIM, Editor
THEODORE R. KENDALL
Secretary and Engineering Editor
M. V. FULLER, Associate Editor
ALDEN W. WELCH, Research Editor
HERBERT K. SAXE
Treasurer
PRENTICE C. FORD, Asst. to President
MYRON MacLEOD, Advertising Mgr.

•

BRANCH OFFICES
Daily News Building, Chicago
TOM DIX, Vice-President
648 Hanna Building, Cleveland
GEORGE S. CONOVER, Vice-President
Mills Building, San Francisco
DUNCAN A. SCOTT, Representative

•

Subscription, $2 per annum in United States and Canada ($3 to foreign countries)
Single copies, 35c
Back numbers available

Entered as second-class matter, July 29, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in U. S. A.

•

In THE MUNICIPAL INDEX AND ATLAS (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find statistical material, and articles on a wide variety of municipal and public works subjects, not published in the monthly issues of the magazine.

Power Plants (continued)
Municipal Plants and the Farms..... 67
Low-Cost Electric Heat 79
New Type of Diesel Engine..... 113

Publications
New Books and Pamphlets..... 101

Radio
Small Cities Going to Radio..... 15

Sewers and Sewage Disposal
Natural Ventilation Through Holes in Manhole Covers 11
Imhoff Tank Gas Burned Under Boilers... 11
Drifting Snow Retarded Sewage Works Operation 11
Billing and Collecting Sewer Rentals..... 47
Installing a Sewer Outfall..... 63

Snow Removal and Street Cleaning
Suffering and Death for Lack of Snow-Plows 13
Sweeping Sidewalks in Rahway, N. J..... 13
Snow-Removal Costs in Oak Park..... 13
Tractor and Sidewalk Plow, Newton, Mass. 13
King Snow Ties Up Town—Then Receives a Knockout 43
A Mechanical Snow Loader for Frozen Snow 109

Streets
Diesel Auto Patrol, Bagdad..... 17
More than 1,000 Square Miles of City Streets 17
Eleven Months of WPA Highway Work in New York 17
Smoothing Gravel Streets in Spokane, Wash. 17
Resurfacing Saves Old Streets and Cuts Maintenance Costs 45
Resurfacing Bituminous Streets in Cincinnati 57
Comparative Street Department Costs..... 83
The Highway as a Part of the Landscape.. 93
Machine Fills Joints, Marks Center Lines.. 107

Traffic
Parking Meters 7
The Majesty of the Law..... 7
Stiff Traffic Penalties in New York State... 15
% Local Cars in Accidents..... 15
The Signal Manufacturer and the Municipality 85
Handling Philadelphia Traffic..... 87
N. Y. State Adopts 3-Color Suspension Lights 87
Truck Signals, N. Y. State..... 87
Legal Status of Parking Meters..... 95
Traffic Signals with Directional Unit..... 113
Headlights and Fixed Lights..... 119

Trailers
Trailers and Cities..... 61

Transportation
The New Trolley 7
The Health and Comfort Aspects of Modern Public Vehicles..... 65

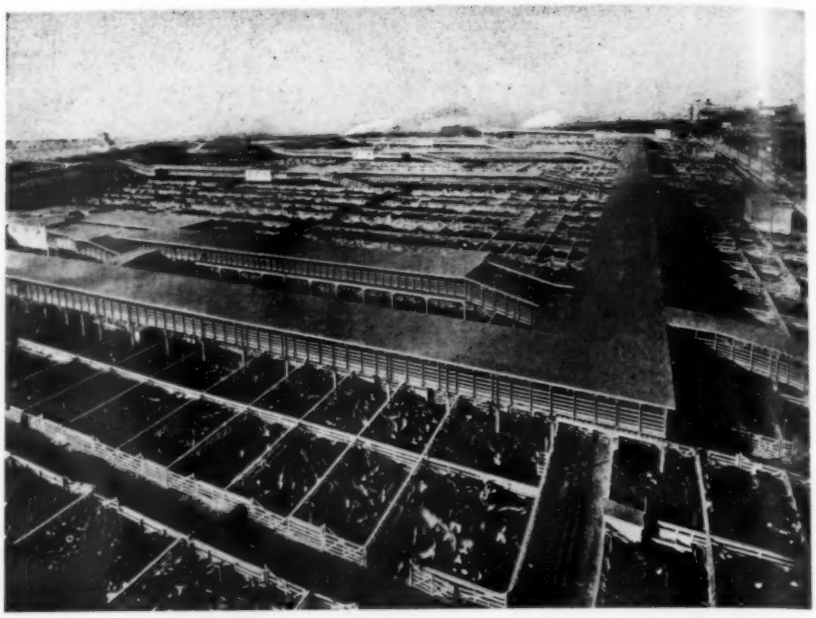
Waste Collection and Disposal
Refuse Collection and Disposal, Oak Park. 13
Paying for Collection of Refuse..... 13

Water Supply and Water Works
The Dental Effect of Fluorine in Water... 9
Lubricating Deep-Well Turbine Pumps..... 9
Dutchman Furnished First Water to London 9
The Water Supply of Chicago, Ill..... 9
Odor-Elimination Treatments..... 48
Manganese Ore for Iron and Manganese Removal 60
Frozen Water Services and Meters..... 69
New Float-Operated Mercury Switch for Pumps 107
The Two Sides of Pipe Protection..... 109
Small Low-Cost Centrifugal Pumps..... 111
Sedimentation Basin with Spiral Baffle.... 111
Thawing Hydrants and Mains with Superheated Steam 111
New Line of Gate-Valves..... 113

Works Progress Administration
Eleven Months of WPA Highway Work in New York 17
WPA Workers Fight Mosquitoes..... 51

See pages 19, 20, 22, 101, 103 for catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 122



A TYPICAL KANSAS CITY, KAN. STOCK YARD

IN KANSAS CITY, KANSAS

Founded on the site of a key encampment of the original Lewis and Clark Expedition, Kansas City, the largest city in the state, is the gateway to the Great Southwest. Historically the city has many interesting legends and facts. The main business district was the reservation of the Wyandotte and Shawnee Indians a hundred years ago. The cemetery laid out by them must remain, according to stipulation, "until the rains stop falling and the river flowing."

Kansas City, Kansas, is chiefly an industrial community, sixty per cent of its industrial output being represented in packing house products. It ranks second in the United States as a meat packing center; third in the production of soap; third in grain storage capacity and fifth as a milling center. Other important industries include structural steel, American walnut, lumber, cattle serum and caskets.

Its well managed water department provides a high quality of palatable water, which is constantly supervised by a corps of trained technicians. With the system 100% metered, water rates are based on the total consumption of each service. For years Kansas City, Kansas, has been a user of Pittsburgh Water Meters to help protect the investment it has in its water works.

KANSAS CITY KANSAS

PITTSBURGH EQUITABLE METER CO.

MERCO NORDSTROM VALVE CO.

MAIN OFFICES PITTSBURGH, PA.

ATLANTA BUFFALO CHICAGO MEMPHIS
NEW YORK COLUMBIA KANSAS CITY PHILADELPHIA TULSA HOUSTON LOS ANGELES OAKLAND

PITTSBURGH WATER METERS

Towards Finer and Safer Cities

Mayor La Guardia on "The New Way of Living"

IN welcoming the delegates to the New York Herald Tribune's Forum on Current Problems, on September 22, Mayor F. H. La Guardia, of New York, made an eloquent plea for the kind of national and local government which will help the physical sciences in the achievement of the "new way of living" for the masses of the people. To quote in part:

"Science could stop today and not do another thing for a hundred years and government could not catch up with it. This is due, not to lack of intelligence, but entirely to the selfishness and greed of men.

"The people of our country have been given the educational background and the spiritual development to enjoy the better, the beautiful things of life. They are hungry for them. They ask, and yet while science has created 'the new way of living' in comfort and ease and happiness, the political and economic way has yet to be found. . . .

"Discoveries and inventions in the field of food have developed to the degree of assuring healthy babies, sound bodies and long lives, and yet we have rickets and undernourished children and people in want. Ventilation and fireproofing, decoration and landscaping have progressed to the stage of blueprints and designs for sanitary, cheerful, comfortable housing, and yet we have firetrap, disease-breeding, dismal tenements.

"What a paradox in a country that will cheer and build monuments, and properly so, to inventors and scientists and discoverers of these new machines, but will seek to ostracize and brand another a radical who seeks to create the laws and establish the economics to make these things possible for all of the people. . . .

"Laws must keep abreast of science. . . . A country which has the inventive genius to create, develop and produce the wonders of which you will hear in the course of the discussion of 'The New Way of Living' certainly must have the genius of finding a way to make this new way a reality."

Universal Police Training Now Possible

WITH $12,000,000 to be provided annually under the Federal Government's extended vocational education program, effective training programs for all police officers in every state in the Union can now be developed. This has been made possible through the recent inclusion of public service employees in the Federal Government's vocational education program. As pointed out in the report of the Committee on Training of the International Association of Chiefs of Police made at the annual convention of the Association in Kansas City, last month, Federal funds have been used for several years to aid in financing statewide police training programs, the California program being a notable example. Now, however, appropriations are increased to a point where adequate training programs are possible for all states. It will be necessary, however, for states to match Federal funds with state or local funds, or both. Matching is on the basis of 50 per cent of Federal appropriations until 1942, the states' shares being increased by 10 per cent increments until 1946, when they are to match Federal appropriations 100 per cent. Combined funds must be spent in accordance with programs which each year are developed by state directors of trade and industrial education and approved by the United States Office of Education.

All chiefs of police who wish to take advantage of this new legislation to establish or to improve programs of police training must first apply to their respective state directors of trade and industrial education to include police training in their 1937-1938 training plans.

Municipal Engineers Discuss Safety Aspects of Street and Highway Lighting

THOUSANDS of people are losing their lives each year in the United States because of insufficient street and highway lighting. Were obsolete street lighting units in cities brought up to required standards, "it is reasonable to expect that about 3,500 lives annually would be saved." More than 7,000 lives a year would be preserved through adequate illumination of major traffic arteries between cities.

This was the gist of the report that the Street Lighting Committee of the American Society of Municipal Engineers and the International Association of Public Works Officials made on September 28 at the Public Works Congress held at Toronto, Canada, by the two organizations.

"So serious has the night accident situation become," said Paul H. Goodell, Chairman of the Committee, "that in many localities statistics reveal that two-thirds of all fatal and serious accidents are resulting from the small fraction of one-fifth of the total traffic which is making use of our public thoroughfares during the hours of dusk and darkness."

Though many cities are replacing inadequate lighting units, Mr. Goodell reported, there is still a serious lack of public demand for improved lighting throughout the country. "This may to some extent have developed from past impressions that street lighting was intended only to serve an ornamental purpose," he said. "Such impressions will be rapidly erased, however, when the public begins to appreciate the value of adequate illumination in reducing accidents and crimes."

Mr. Goodell pointed out that although one New York county alone this month dedicated 22 miles of new highway lighting, and although a dozen or more states are installing experimental highway lighting systems, "there is still a majority of the states in which expenditures for highway lighting cannot legally be made."

Sir Raymond Unwin at Columbia University

SIR RAYMOND UNWIN, of London, international authority on town planning and housing, has been appointed Director of the Town Planning Studio of the Columbia University School of Architecture, it is announced by Dean Leopold Arnaud.

Sir Raymond, former President of the Royal Institute of British Architects and of the International Federation for Housing and Town Planning, succeeds Henry Wright, founder of the Studio, who died on July 9. He will be assisted by Carl Feiss, now associated with the Cleveland Plan for Slum Clearance, and by a staff of special lecturers.

During the academic year 1936-37, Sir Raymond will have charge of studies in town planning and housing under a grant from the Carnegie Corporation. Housing development in the smaller communities adjacent to New York City will be the principal activity of the Studio.

Model grouping of residences, mercantile establishments, schools, theaters and recreational facilities will be studied.

The Studio at Morningside Heights will be organized in two sections. One will be devoted to seminars, to be held on Thursday afternoons, beginning October 8, and to be open to the public. The other will deal with design for graduate, undergraduate and special students. Problems in design will embrace the civic aspects of the metropolitan district, including plans for the rehabilitation of specific sections.

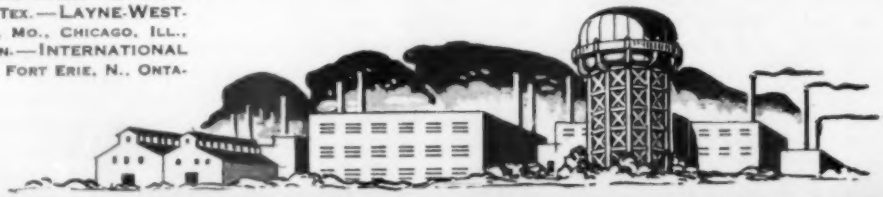
Only Layne CAN OFFER SUCH Experience

SINCE all Municipalities must have large quantities of water, only the best Wells and Pumps should be considered. In no other part of your equipment does knowledge and experience play such an important part.

Today Layne stands out as the world's most distinguished leader in the installation of correctly engineered well water systems and in the manufacture of the finest high efficiency pumps. Regardless of what water production problems you may face, Layne engineers can give you valuable advice. No obligation. For illustrated literature write Layne & Bowler, Inc., Dept. B, Memphis, Tenn.

AFFILIATED COMPANIES

LAYNE-ARKANSAS CO., STUTTGART, ARK.—LAYNE-ATLANTIC CO., NORFOLK, VA.—LAYNE-CENTRAL CO., MEMPHIS, TENN.—LAYNE-NORTHERN CO., INC., MISHAWAKA, IND.—LAYNE-LOUISIANA CO., INC., LAKE CHARLES, LA.—LAYNE-NEW YORK CO., INC., NEW YORK CITY—LAYNE-NORTHWEST CO., MILWAUKEE, WIS.—THE LAYNE-OHIO CO., COLUMBUS, OHIO—LAYNE-BOWLER NEW ENGLAND CO., BOSTON, MASS.—LAYNE-TEXAS CO., HOUSTON, TEX.—LAYNE-WESTERN CO., KANSAS CITY, MO., CHICAGO, ILL., AND MINNEAPOLIS, MINN.—INTERNATIONAL WATER SUPPLY, LTD., FORT ERIE, N., ONTARIO, CANADA.



LAYNE PUMPS
LAYNE WELL WATER SYSTEMS

Our Municipal Notebook

Parking Meters

PRACTICAL interest in parking meters as the solution for business-area congestion has extended to Minneapolis and Buffalo. At Minneapolis on September 23, bids were opened for 1,000 meters, with keen bidding reported. At Buffalo the Streets Committee of the Buffalo Safety Commission voted "on September 15 to recommend to the Commission that meter parking be established in Buffalo on a trial basis for a period of at least ninety days." William B. Powell, Traffic Engineer of Buffalo, advises that as a result of this recommendation, which was approved by the Safety Commission, "a communication will be forwarded in due course from the Safety Commission to the City Council for action."

At Toledo, Ohio, contract was awarded September 24 for 1,000 meters to be installed by November 1.

The Majesty of the Law

MARSHALL MASLIN, newspaper columnist, expresses some wonder at the forbearance of many traffic officers, in view of the universal propensity of driving-humans to err. He tells of a specific instance in which he was given a ticket and then fined $5, both operations being performed courteously. Two years later this same officer arrested a friend of Mr. Maslin's in the same agreeable manner, and Mr. Maslin wonders how such officers can keep from becoming hardened and unpleasant in their attitude.

Another instance may help toward the answer. Captain Thomas Lofthouse, commanding the Los Angeles Police Safety Division, recently said that "the mere presence of a fully uniformed officer on a motorcycle does more to prevent accidents in the immediate locality where he is observed by the motorists than his efforts in handing out traffic tickets."

For example, at a certain intersection, he and Sergeant F. G. Woodward put a stop-watch on passing vehicles, and found them moving pretty fast. Then the Sergeant placed his motorcycle at a conspicuous point and mounted it, while Captain Lofthouse, with stop-watch, discovered that the majority of cars had lessened their speed by 10 to 20 miles per hour.

Motorcycle officers, and indeed police officers generally, must be conscious of the fear, awe, or respect which they inspire. This engenders a feeling of responsibility which with the right men is translated into courtesy and helpfulness.

4-Inch House Numbers for Buffalo, N. Y.

A GREAT many individuals and organizations have talked about the desirability of having house numbers that can be seen and quickly read. The city of Buffalo has actually ordained that there shall be such numbers, and here is the ordinance passed July 21 and made effective August 4, giving the details:

§ 1. *Numbering of Houses.*—It shall be the duty of every owner of a building in the city of Buffalo to cause to be displayed thereon the street number of said building, and at all times to maintain such number in compliance with the provisions of this chapter. The figure or figures comprising said number shall be at least 4 inches in height, and shall be placed on said building in such a manner as to be plainly legible from the center of the said street at all times between sunrise and sunset. The color of said figures shall be in sharp contrast to the color of their background. Such numbers shall be placed on the top riser of the steps leading to the front entrance of said building, or other permanent place on the front of the building. Any person, firm or corporation who violates any provision of this section shall be liable to a fine or penalty of not to exceed $25.

Are Flood Lessons Learned?

BASING his statements on observations of the recent floods, an engineer of the National Board of Fire Underwriters sums up a number of things that should be done for public safety in preparation for future floods:

During the period of inundation the probability of lines of communication, including telephone, fire-alarm, and police signaling, supervisory and telegraph systems, being out of service is so extremely high that it will be necessary to provide additional watchmen or patrol service and utilize available amateur radio sets and operators. The routing of signaling circuits so that areas can be eliminated without interfering with the service of the remainder of the system, the use of rubber-covered wires in properly potheaded and spliced cables in which materials are not subject to moisture and dampness, and the provision of reliable current supply from an independent generating source, are of primary importance in keeping signaling systems in operation. The normal inability of the fire department to respond and operate at fires in inundated areas must be overcome by the provision of power-boats and rowboats, pontoons, anchors, ropes, rigging equipment and portable pumping units; patrolling of the area will also require this water transportation. It may become necessary to organize special squads versed in the use of explosives, whose duty it will be to raze buildings in the path of a fire and provide an open space calculated to stop the spread of fire.

Every year there are floods somewhere, followed by statements of what happened and what to do next time. The foregoing suggests two common-sense measures: use moisture-resistant wires in the signal system, and provide floating and portable equipment for the fire departments in areas subject to floods.

Good Cable

"AS an example of the worth of good cable," said Herbert H. Berry, Superintendent of Fire Alarm, Springfield, Mass., at the National Municipal Signal Association, meeting in New York, "I will refer briefly to the March flood. We had five fire-alarm box circuits affected by the high water. Twenty-four boxes were out of commission for 8 days, and 19 were out for 21 hours. The whole system began to function as soon as the water left the slate terminal boards, and after that there was no ground on any cable. Some of this cable has been in continuous use for 36 years, and I think this service bears pretty good testimony to the worth of the cable."

It does, and to the intelligence of those who specified and of those who permitted the purchase of good cable that kept the circuits in operation. The best product is usually the cheapest, not only because it is likely to be more dependable, but also because the pride of the manufacturer goes with it.

In Old New England

SOMETIMES the most interesting fact about a good business system is that it was not installed years before. The city of Boston has only recently established mechanical budget-control that replaces monthly and manual posting with up-to-date balances on all budget items.

Equally interesting, on a smaller scale, is the snappy billing method now practiced by the Municipal Light Department of Belmont, Mass. Manager E. P. Taylor believes such a system tends to improve customer relations.

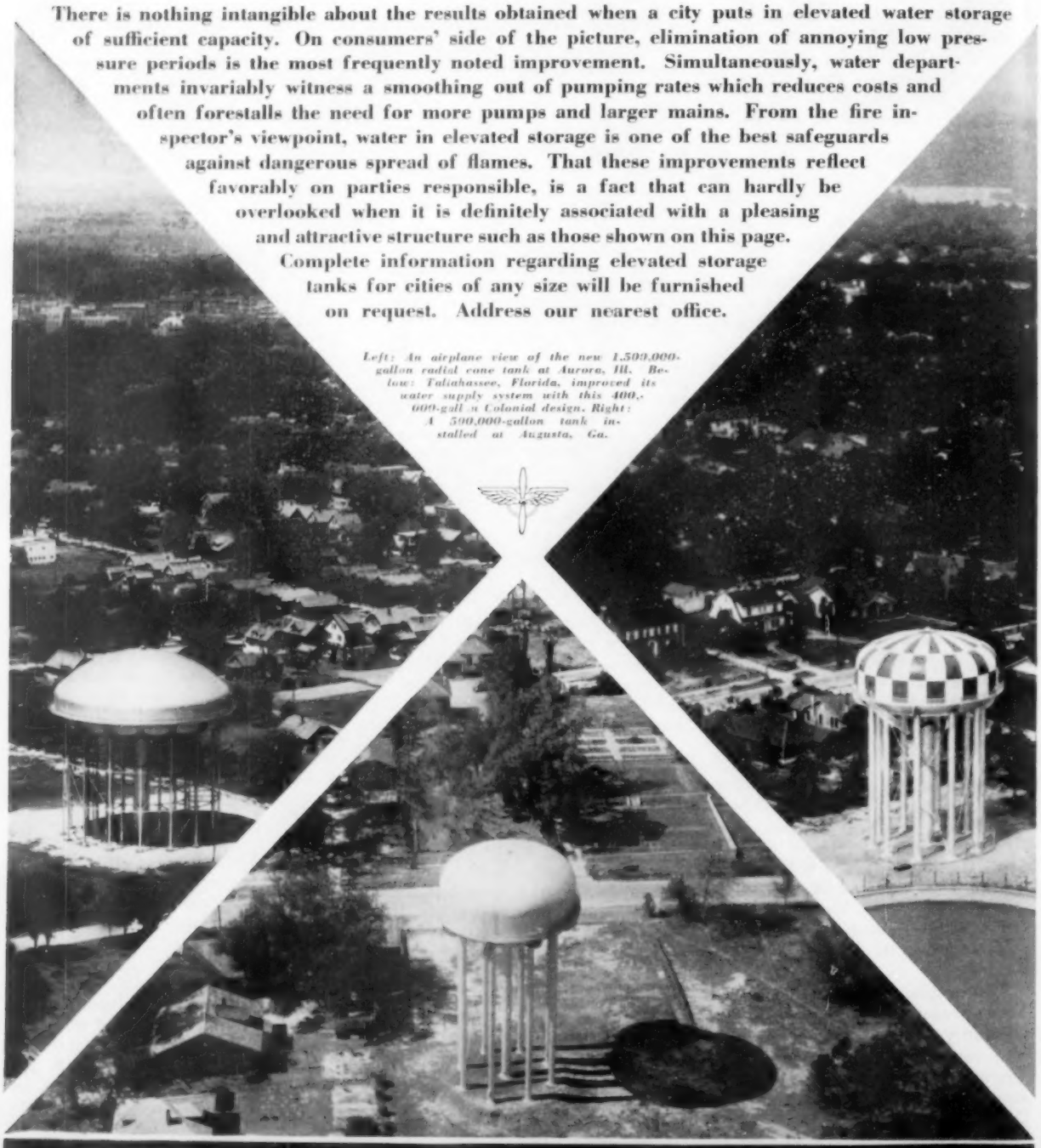
The New Trolley

PRONOUNCED by engineers "the smoothest-riding vehicle of any kind on New York City's streets," twenty of the famed new street cars described in this magazine in May were put in operation in Brooklyn by the Brooklyn and Queens Transit Corporation on October 1.

It's Easy to SEE the Advantages of Large Capacity Elevated Storage

There is nothing intangible about the results obtained when a city puts in elevated water storage of sufficient capacity. On consumers' side of the picture, elimination of annoying low pressure periods is the most frequently noted improvement. Simultaneously, water departments invariably witness a smoothing out of pumping rates which reduces costs and often forestalls the need for more pumps and larger mains. From the fire inspector's viewpoint, water in elevated storage is one of the best safeguards against dangerous spread of flames. That these improvements reflect favorably on parties responsible, is a fact that can hardly be overlooked when it is definitely associated with a pleasing and attractive structure such as those shown on this page. Complete information regarding elevated storage tanks for cities of any size will be furnished on request. Address our nearest office.

Left: An airplane view of the new 1,500,000-gallon radial cone tank at Aurora, Ill. Below: Tallahassee, Florida, improved its water supply system with this 400,000-gallon Colonial design. Right: A 500,000-gallon tank installed at Augusta, Ga.



CHICAGO BRIDGE & IRON WORKS

Chicago	2127 Old Colony Bldg.	Philadelphia	1616 "1700" Walnut St. Bldg.	San Francisco	1033 Rialto Bldg.
New York	3308-165 Broadway Bldg.	Boston	1501 Consolidated Gas Bldg.	Houston	2919 Main Street
Cleveland	2246 Rockefeller Bldg.	Birmingham	1502 N. Fiftieth Street	Tulsa	1625 Thompson Bldg.
Detroit	1501 Lafayette Bldg.	Dallas	1406 Dallas Athletic Club Bldg.	Los Angeles	1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water Supply and Purification

The Dental Effect of Fluorine in Water

IN the July, 1936, issue of THE AMERICAN CITY on page 9 appeared an item under the same title that heads this paragraph. A typographical error in the fourth line of the item may have caused some dismay to our readers.

Mottled enamel is caused on the teeth of children by the consumption of water containing from 0.9 to 1 ppm of fluorine, and not 0.09 as was recorded in our July issue.

Lubricating Deep-Well Turbine Pumps

A DEEP-WELL turbine pump is a vertical unit, with impellers arranged for multi-stage operation. It is generally driven by an electric motor or steam turbine located at the surface. Along the shaft tube or cover pipe which encloses the pump shaft is a series of steady or guide bearings of the plain journal type which serve to center the pump shaft, overcome "whipping," and maintain it in proper alignment. These bearings require lubrication, which is usually accomplished by feeding oil into the top of the shaft tube, whence it flows to the bearings. Several different methods of supplying oil are employed, the simplest consisting of a sight-feed lubricator at the driving head of the pump and connected to the shaft tube through piping. Sometimes the lubricator is arranged to start and stop with the pump by either mechanical or electrical means. With either device the flow is usually adjusted to feed from three to four drops of oil per minute per 100 feet of shaft.

With such systems, the comparatively high speeds at which the pumps operate make it necessary to use a low-viscosity or light-bodied oil to reduce internal friction in the lubricant to as low a degree as possible and thereby minimize the amount of power consumed. In old or badly worn pumps, however, a light oil may leak excessively from the stuffing-box at the lower end of the shaft tube, and it may therefore be necessary to employ a heavier-bodied lubricant to prevent excessive consumption. In such cases it is important to select a product which will not become too viscous or congeal at the low temperatures existing at the bottom of the well.

In certain cases the shaft guide bearings are made of medium-soft rubber or of lignum vitae, a very hard wood, lubricated by the water itself. Unless a very pure neutral water is being pumped or the shaft is made of corrosion-resistant metal, the action of the water may cause corrosion and pitting of the shaft. This, in turn, increases friction and bearing wear. Most makers, therefore, have adopted the practice of lubricating these bearings with grease. The bearings, packed at the factory, are claimed to need repacking infrequently.

The weight of the entire rotating element must be supported in some manner, and it is therefore necessary to supply a suitable thrust bearing to carry this load. An anti-friction bearing is generally used in the driving mechanism. Such bearings are usually lubricated by an oil bath. In some very large deep-well pumps, however, a pivoted-shoe thrust bearing is mounted below the driving mechanism at the top of the shaft tube. These bearings are usually immersed in an oil bath, the heat generated in the bearing being removed from the oil either by an oil-cooler or by water-jackets surrounding the bearing housing.

—Courtesy of *Esso Oil-Ways*.

Dutchman Furnished First Water to London

IN 1580, Peter Morris, a Dutchman, took a lease from the city of London, England, of the first arch of London Bridge for 500 years, and there built his famous water mill for pumping Thames River water. The Lord Mayor and Aldermen attended in state to see the first water monopolist throw a jet of water over the steeple of the Church of St. Magnus-the-Martyr. That lease was one of the legacies of the present Metropolitan Water Board of London from the London Corporation—£3,750 was being paid annually and would be so paid until the year 2032.

The supply of water from the pump at London Bridge, however, proved inadequate, and the Corporation obtained powers from Parliament to bring water from Middlesex and Hertfordshire. The powers were not exercised, and in 1607 there was a new Act for the construction of the New River from Amwell and Chadwell, in Hertfordshire. Such powers were transferred to Master Hugh Myddleton, with any profit that might accrue. Myddleton met with much discouragement, and when the waterway was only half completed he had to cease work for want of funds. Ultimately King James I found the money, and on Michaelmas Day, 1613, the then Lord Mayor, Sir John Swinnerton, visited that very spot to see the water from Hertfordshire run into the Round Pond.

The Medical Officer in 1851 expressed the view that it was a great calamity that the water supply of so great a city should be in the hands of traders, for the imperfection of the supply was the greatest sanitary evil of the day. Things are different now in London, for the Metropolitan Water Board provides pure water for over 7,500,000 people, or nearly one-fifth of the population of England and Wales.

—From the London, England, *Times*.

The Water Supply of Chicago, Illinois

SUMMARY OF STATISTICS—CHICAGO WATER WORKS, YEAR ENDING DECEMBER 31, 1935
GENERAL FORM RECOMMENDED BY THE NEW ENGLAND WATER WORKS ASSOCIATION

General Statistics

Population of Chicago (estimated)	3,808,921
Date of construction	1852 to date
By whom owned	City of Chicago
Source of supply	Lake Michigan
Mode of supply—By gravity from intakes 2 to 4 miles out in Lake Michigan through tunnels to pumping stations. Direct pumping into mains.	

Water Consumption

Population of Chicago (estimated)	3,808,921
Population of outside communities supplied through Chicago water-works system	441,502
Total population supplied	4,250,423
Pumpage, city of Chicago—gallons	346,327,508,425
Water delivered through meters to towns outside Chicago, gallons	13,837,491,575
Total net pumpage of water system—gallons	360,165,000,000
Water passed through meters within city limits of Chicago—gallons	124,950,555,674
Percentage of water consumption metered—city	36.07
Average daily consumption in Chicago—gallons	948,842,489
Gallons per day to each inhabitant—city of Chicago	249.11

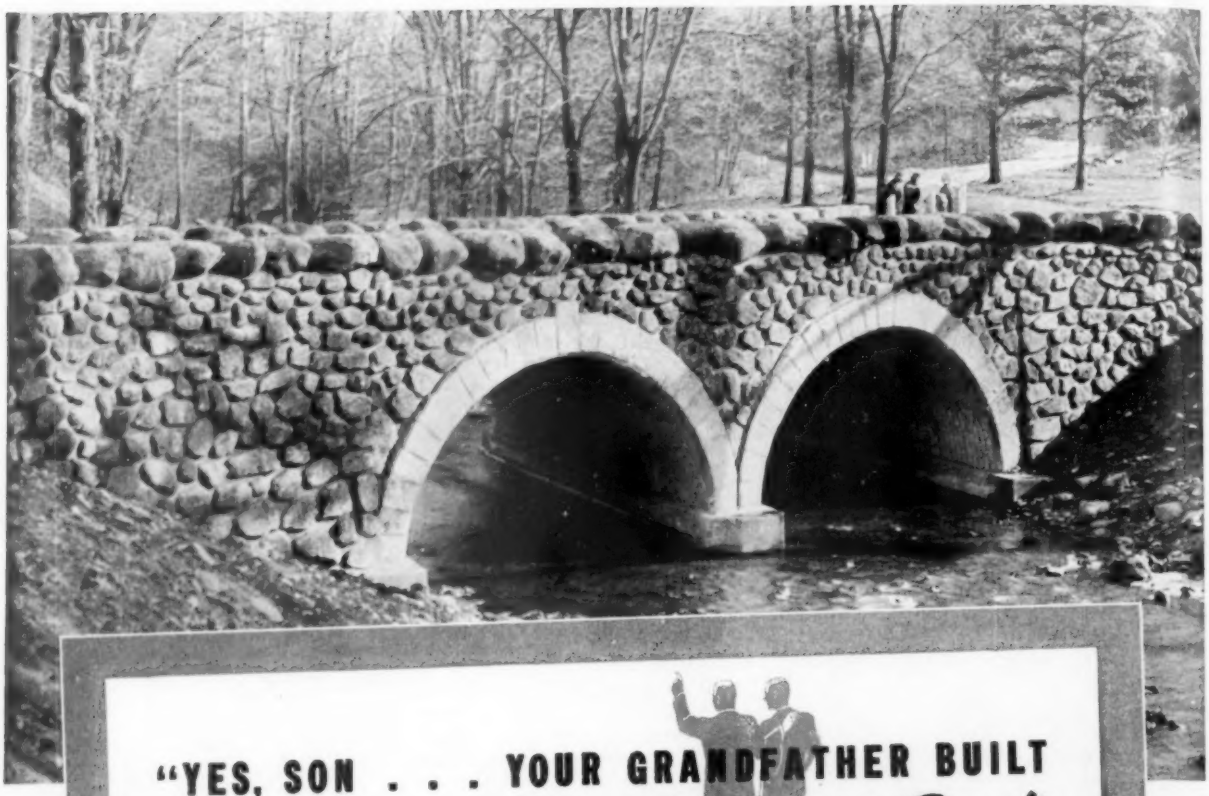
Services

Kind of pipe and sizes	Lead—¾" to 2" cast iron—3" to 16"
Assessed services	301,416
Metered services in use	111,773
Metered services (meters temporarily removed)	3,627
Total services	413,189
Meters installed during the year	708
Revised list of meters now in use	111,773
Percentage of services metered	27.05
Revenue from assessed rates	$3,426,957.16
Revenue from metered rates	$9,498,053.41
Percentage of revenue from metered rates	73.48

Distribution System

Kind of pipe	Cast iron
Size (inches)	4 to 54
Extended—miles	32.18
Discontinued—miles	18.55
Total in use—miles	3,747.25
Hydrants added during year	1,681
Hydrants abandoned during year	1,556
Hydrants now in use	39,833
Gate-valves added during year	819
Gate-valves abandoned during year	385
Gate-valves now in use	36,575
Pressure range in mains—lbs. per sq. inch	25 to 65

This information was compiled by the Operating Division of the Bureau of Engineering.



"YES, SON . . . YOUR GRANDFATHER BUILT THAT BRIDGE *40 Years Ago*"

IMAGINE *your* son and grandson . . . forty or fifty years from now . . . standing before an Armco Multi Plate bridge *you* built in 1936. Think how proud they'll be to find that bridge as sturdy and attractive as the day it was completed. A lasting monument to your good judgment.

Remember, every Armco Multi Plate bridge is made of genuine Armco Ingot Iron—the metal which road builders know best for its *30-year service record* in culverts and drains. In Multi Plate this same long-lasting iron is *3 to 4 times as thick*, with extra large corrugations to give it super-strength for all conditions.

Even so, these heavy corrugated plates are surprisingly easy to handle and install. Bolting them together in the field is almost as easy as changing a tire on your automobile. And once the earth backfill is placed, you can dress up your bridge with attractive headwalls of stone or concrete—to suit your own taste.

Call in an experienced Armco man today. Let him show you a few typical Multi Plate jobs that have been built by engineers and officials who, like you, take *personal* pride in serving the public. This request won't obligate you in any way. Armco Culvert Manufacturers Association Middletown, Ohio.

☐ Send more information on Armco Multi Plate.

Name _____

Title _____

Address _____ AC-10 36

MULTI ARMCO PLATE

Armco MULTI PLATE

Manhole Ventilation—Sewage Works

Natural Ventilation Through Holes in Manhole Covers

BECAUSE of its interest in accident prevention, the U. S. Bureau of Mines cooperates with city officials and utilities in investigating causes of explosions in sewers, manholes and other underground openings and in developing means for preventing such explosions. Recent investigations have shown that combustible gases from the usual sources, leakage of gas-distributing systems and from underground tanks and gasoline wastes, can be located and the dangerous conditions remedied by a well-planned, adequately supervised, systematic, and continuous manhole survey. Other types of gas, however, which are termed "soil" gases, also occur in manholes and are more difficult to eliminate because they have no fixed origin and because seasonal and barometric changes affect their production and passage into the manhole space.

These gases appear to be introduced by bacterial reactions and fermentation or through reactions of entrapped air in the soil. Soil gases are usually abnormally high in carbon dioxide and low in oxygen, and contain varying amounts of methane. They are usually dangerous to men entering manholes, because they lack sufficient oxygen to support life. Owing to the difficulty of constructing gas-tight manholes, the most feasible method for eliminating soil gases from manholes is by ventilation. Consequently the Bureau of Mines initiated a study of natural ventilation methods for the removal of these gases from manholes, and also for taking care of unforeseen accumulations of combustible gases and vapors.

The following factors are considered by the Bureau to be important to the natural ventilation of manholes: (1) relation of area of ventilation openings to the capacity of the manhole; (2) size and shape of the manhole; (3) design of the ventilation openings; (4) wind velocity; and (5) weather conditions.

Investigations carried on by the Pittsburgh Experimental Station of the Bureau in an experimental manhole having a capacity of 74.1 cubic feet showed that the air changes per day in the manhole were almost directly proportionate to the number of openings in the cover, and also that the number of openings in the cover was the factor that chiefly affected the ventilation.

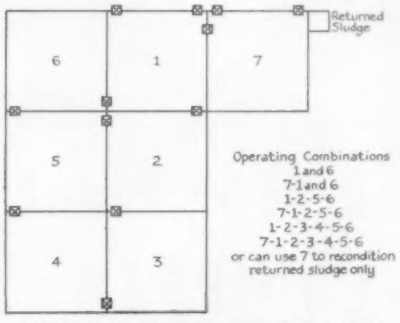
—From a Report of Investigations, R. I. 3307, June, 1936, U. S. Bureau of Mines.

Imhoff Tank Gas Burned Under Boilers

DURING the latter part of May, 1935, a project for odor control was completed by the Sewer Department of Holland, Mich. The principal object was to eliminate the obnoxious odors from the gas vents of the Imhoff tanks, as well as odors emanating from the sewer at the screen chamber. The gases from the Imhoff tanks are combustible and have a heat value even greater than that of manufactured gas, so it was decided to use it for heating the pumping station and for incinerating bar screenings and skimmings from the tanks.

To accomplish this, the gas vents of the Imhoff tanks were sealed with heavy slabs of concrete in which were imbedded a series of 48 circular wells or gas domes consisting of short pieces of 10-inch pipe and equipped with suitable valves for control. Should it become necessary to remove the scum in the gas vents, the gas valves can be closed and a suction hose inserted by removing a small flange on the gas domes.

The gas which is generated by the digestion of the sludge accumulates in the gas domes, which extend about 15 inches above the level of the tanks, and from there it is conveyed to a 4-inch main which delivers the gas directly to the pumping station and to the incinerator. There are four telltale bubblers inserted in the pipe lines which enable the operator to determine whether or not the gases are being liberated in each tank. These are constructed of glass and filled with water in the summer, and with a non-freezing solution such as kerosene in the winter.



LAYOUT OF SIMPLEX AERATOR TANKS AT WOODSTOCK, ILL.

Tanks 7, 1, 2, 3 and 4 were thrown out of operation by the snow. By closing the valves on 3 and 4, 1, 2 and 7 were started in the order named. At this time number 7 was being used to recondition returned sludge only

Upon entering the pumping station the gas is conveyed through a moisture collector and flame traps to prevent back-fire, thence through a meter to a pipe line under the heating boiler of the station and to the incinerator. Suitable instruments such as indicating pressure manometers and indicating pyrometers enable the operator to regulate the system.

In 1935 a total of 1,538,200 cubic feet of gas was collected and burned under the boiler and in the incinerator from the time the system was placed in operation to the end of the year. This was an average of 5,593 cubic feet per day, which was sufficient to heat the plant and to incinerate all screenings without the use of other fuel. The incinerator is a structure 11 feet 6 inches by 7 feet 6 inches, with a stack 25 feet in height, and is constructed of face brick similar to the pumping station.

A blower fan removes the exhaust air from the screen room, discharging it through the combustion chamber of the incinerator, which effectively destroys the odors from that source. Screenings and tank skimmings are removed manually and burned in the combustion chamber of the incinerator. This waste was formerly thrown aside and covered with sand, which caused obnoxious odors.

Drifting Snow Retarded Sewage-Works Operation

IN Woodstock, Ill., on February 8, 1936, a severe snowstorm and blizzard covered the grit chamber of the sewage-treatment plant with snow to a depth of 6 feet. It filled the primary settling tank with snow, so that it was impossible to operate the sludge collectors, and it also put five of the seven aerators in the installation out of operation. On the morning of the 9th, when the operator arrived at the plant, only two aerators were working. The sewage was flowing through the plant, so it was getting some treatment in the primary and final settling tanks. At no time, however, was the plant entirely out of service, and by noon of the 9th five of the aerators were operating.

It was necessary to remove the snow from the primary tank so that the Link Belt sludge collectors could skim the surface, for the collector could not pull through the slush at the top of the tanks. To prevent snow from drifting in and again stopping the sludge collectors, a sort of snow fortification was built around the plant, ranging from 6 to 8 feet in height. During this period the temperature ranged from 0 to 25 below zero, and the temperature of the sewage and the plant was 34 degrees F.

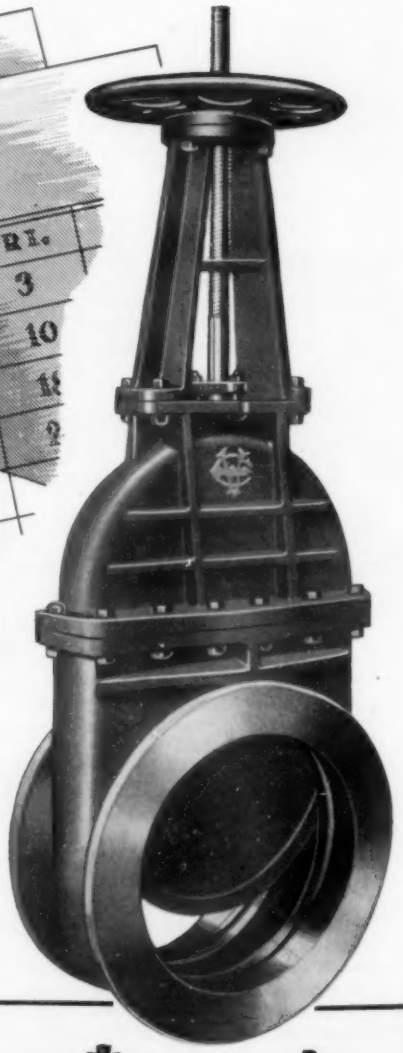
Where the drive chains on the sludge collectors came out of the water to the drive gears, ice formed on the chains and froze to the concrete shearing the cotter pins in the chain. To overcome this, the chains and gears were coated with heavy tractor oil, which proved effective. There is one point at the influent end of the final settling tanks where the sludge collector comes to the surface, and at this point it was necessary to break the ice away quite frequently. The accompanying sketch of the aerators shows their flexibility which proved valuable when the snow trouble was encountered.

The snow was so heavy in number 3 and number 4 that it pushed the aerator draft tubes out of plumb, and it was necessary to empty these tanks to plumb the tubes. In the three other aerators the snow was shoveled from the aerator wheels and where the draft tube goes inside. Then they were thawed and started.

—Information furnished by Ray Corr, plant operator, Woodstock, Ill.

You're Ahead of the Times for Years to Come

. . . when your Plant is CHAPMAN-EQUIPPED



You can put behind you the worries and costs of maintenance, obsolescence, depreciation—and *keep* them behind you for years to come.

With Chapman equipment in your plant, maintenance will be hardly more than inspection . . . depreciation so slow as to be unappreciable. And as for obsolescence, Chapman design, looking far ahead to tomorrow's requirements, will keep your plant *modern and up-to-date* —keep it from growing old before its time. These characteristics of Chapman equipment have been proved over and over again—for more than 75 years—on projects like your own.

And Chapman gives you the added advantage of a single source of supply for all needs. Globe, gate and check valves, with fittings, in all sizes. Automatic cone and altitude control valves. Sluice and shear gates, hydrants, brass goods. Foot, flap, and mud valves. Floorstands and all types of operating mechanisms. Write.

Chapman List 61 Gate Valves have strong iron bodies . . . heavy hard bronze seat rings and disc faces that can be economically removed and renewed. They exceed A.W.W.A. specifications.

Chapman Floorstands provide a proved modern method of operating gate valves and sluice gates either electrically or manually. Motor-operated floorstands are ideally suited for control of large gates.

The **CHAPMAN VALVE** MANUFACTURING COMPANY

Indian Orchard - - - - - - - - Massachusetts

Snow Removal—Refuse Disposal

Suffering and Death for Lack of Snow-Plows

LAST winter taught many cities a lesson. Communities and sections of cities were isolated for days and even weeks because the snows were heavier and more frequent than they had experienced for a decade.

Snow-plow manufacturers report that some cities in the snow belt have learned a lesson from last winter's experience and have already ordered new plows and attachments. The importance of placing orders during the "dog days" cannot be exaggerated. There are plenty of late comers who place their orders tardily, forcing the snow-plow manufacturers to work day and night to fill their orders in the late fall and early winter. If a heavy storm hits you as it did one Mid-West state highway department last year, you will be in the same kind of a hole. This department sent frantic telegrams to all snow-plow manufacturers during one of the big storms of last winter, begging for the immediate delivery of any kind of a plow just so that it would move snow.

To delay in properly equipping your street department with snow-plows is just as hazardous to life and limb as failure to adequately equip your fire department.

Refuse Collection and Disposal, Oak Park, Ill.

THE disposal of garbage has been satisfactorily solved in Oak Park by the construction of a garbage incinerator. All combustible waste materials are disposed of in this centrally located plant without smoke, odor or nuisance of any kind. The plant has a rated capacity of 10 tons per hour. All small dead animals, such as cats and dogs, are disposed of in this plant.

The garbage collection equipment consists of two 1-ton Ford trucks, three semi-trailers with a 1-ton Ford tractor, and two Highway trailers, with a force of 17 men, working 9 hours per day.

The incinerator is operated 13 hours per day excepting on Saturdays, Sundays and holidays. Five men comprise the crew, two of whom are on the charging floor, and one in the furnace room during the day, and two work at night finishing the burning of the garbage and cleaning the furnace and building. The men working on the collection and disposal of garbage are on a 5-day schedule.

In addition to the garbage and combustible waste collected by the Street Department, a considerable amount of combustile rubbish and waste materials from hotels, restaurants, markets, fruit stores, etc., is delivered by private vehicles to the plant.

During 1935, according to the Annual Report of the village, the village teams and trucks collected 9,522.5 tons of garbage and combustible waste, which included 1,462 cats and dogs. Grocers, market men and others delivered 1,530.8 tons of combustible waste to the incinerator. The plant was operated 256 days, burning an average of 43.18 tons daily. The cost of collection and disposal of all garbage and combustible waste was $40,509.54 for the year, or $3.129 per ton for collection and $0.969 per ton for disposal.

Snow-Removal Costs in Oak Park

THE 1935 Annual Report of the village of Oak Park, Ill., gives the total cost of snow removal for 1935 as $3,745.20. That year just escaped the heavy snowfalls of the winter of 1935-36, which occurred mostly in 1936.

Whenever weather conditions make it necessary, snow is removed from the sidewalks and street pavements. The 200 miles of sidewalks are plowed with steel V-shaped horse-drawn plows. The horses from the Garbage and Rubbish Collection Department are used for plowing the sidewalks. Teams start out early in the morning and, as a rule, all sidewalks are plowed by noon.

The sidewalks leading to transportation stations and to schools are plowed first. All street pavements in the village are plowed. Boulevards, through streets and business districts are plowed first; that is, the snow is pushed from the pavement to the curbing. After the principal thoroughfares are plowed, the residential streets are cleared. Snow from the business districts, the principal intersections and from around public schools, churches, etc., is removed by truck and disposed of in vacant lots around the village.

In February and December, 1935, there was considerable snow. The 200 miles of sidewalks in the village were plowed three times. Boulevards and through streets, of which there are 11½ miles, and all other streets, of which there are 100 miles, were plowed three times.

The Annual Report shows that 305 loads of snow were removed, 53,400 pounds of salt used, 9½ cubic yards of sand, 343 cubic yards of cinders, and 6,700 pounds of calcium chloride.

Sweeping Sidewalks in Rahway, N. Y.

TO keep the streets of Rahway, N. J., clean, Walter J. Matthews, Street Superintendent, has sought the cooperation of merchants. Every street superintendent knows that one of the main difficulties in keeping streets in business districts clean, is the general practice of merchants to sweep the sidewalks in front of their stores at various times during the day and deposit the débris in the gutter.

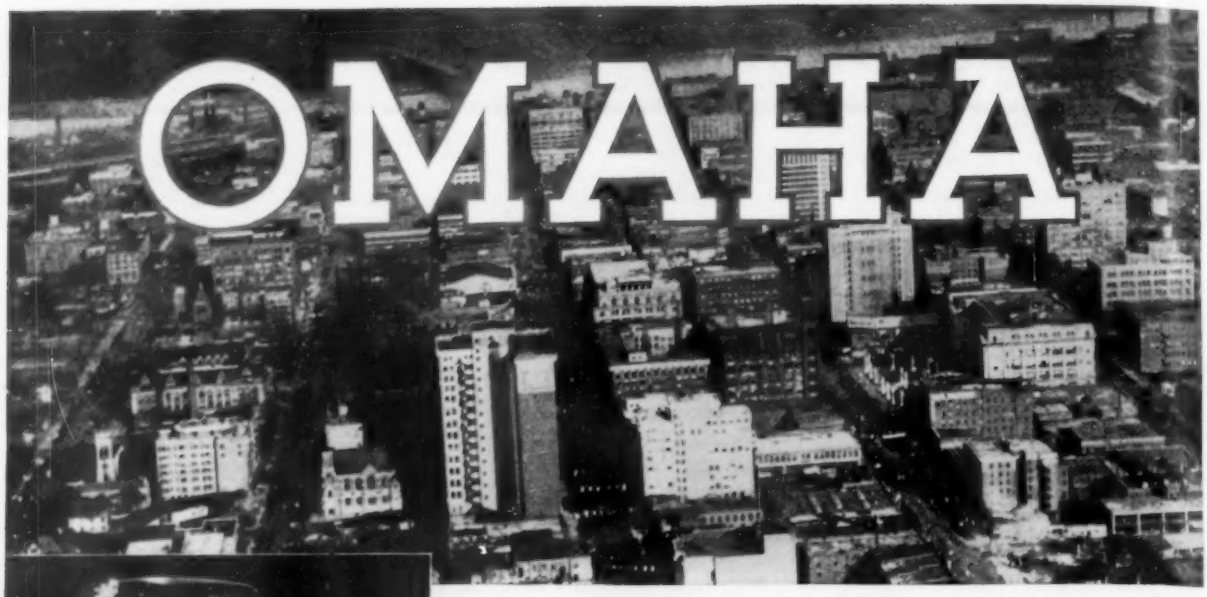
Believing that something should be done about this, Mr. Matthews had a small notice printed which was delivered to all the merchants. It read: "The city has gone to the expense of purchasing a street sweeper in an effort to keep your streets clean. Your cooperation will make this a worth-while investment. The Street Department requests that you do not sweep dirt and papers into the gutters after 6. A. M."

Excellent results have been secured, for nearly every merchant has cooperated fully, and the business section looks much neater throughout the day.

Paying for Collection of Refuse

REFUSE disposal on a fee basis has been inaugurated in Huntington, W. Va., with extremely low rates. The charge for a family is but $3.50 per year, and for each store or business, $15 per year for weekly service. The fees pay the cost of the collection service and amortize expenditure for new equipment and the new incinerator.

THE CLETRAC TRACTOR AND SIDEWALK PLOW USED BY THE CITY OF NEWTON, MASS., TO INSURE CLEAR WALKS FOR PEDESTRIANS



Tests each brake separately—by full wheel revolution under electric power . . . shows total stopping ability . . . shows up "out-of-round" drums. TESTS TRACTOR AND TRAILER TRAINS with utmost accuracy.

Tests wheel alignment, caster, camber, toe-in, entire steering geometry, precisely and quickly. Shows exactly what work needs to be done. Nothing left to guesswork or estimate.

BENDIX PRODUCTS CORPORATION
401 Bendix Drive, Dept. A-10, South Bend, Indiana

Send me at once full details about Civic Safety Clinic Equipment, prices, operating plan, etc.

Name .....

Address .....

City ..... *State* .....

Business or Profession .....

City Official (title) ☐ ..... Dealer ☐

ORDERS BENDIX

CIVIC SAFETY CLINIC EQUIPMENT

•

SEATTLE, too, selects this sure route to *SAFER STREETS!*

CITY after city, where street safety is being taken seriously, turns to Bendix for the vital testing line equipment. Knoxville, Cincinnati, Miami, Billings, Portland—are typical, and the list lengthens each month!

If *your* city has ordered municipal vehicle inspection, insure getting off on the right foot. No matter how much or how little you've got to spend, Bendix, the pioneer sponsor of "Street Safety by Prevention," offers *more* for your money.

Bendix Civic Safety Clinic Equipment is *positively and consistently accurate.* It is fast. It is simple. It is very sturdy.

Most car factories use it on final new-car tests. It covers brakes, steering, headlights, wheel alignment and as much in addition as you desire to check.

Fill out and mail the coupon TODAY.

BENDIX PRODUCTS CORPORATION
(Subsidiary of Bendix Aviation Corporation)
401 Bendix Drive, Dept. A-10, South Bend, Ind.

Public Safety

Stiff Traffic Penalties in New York State

RESPONSIVE to the demand for longer legal teeth and harder biting, the state of New York made these speeding penalties effective September 1:

Speeding, first offense, maximum fine of $100 and maximum jail sentence of thirty days.
Speeding, second offense, within eighteen months of first offense, minimum penalty of $50 fine to a maximum of $100 and ninety days in jail.
Speeding, third offense, within eighteen months of first offense, minimum of $100 fine and maximum of $500 and 180 days in jail.

In New York City, a committee of all the city magistrates has drawn up a schedule of uniform fines to fix speed violations; $25 or two days in jail for first offense; $50 or five days for second; 20 days and revocation of license for the third offense. The purpose of the schedule is to prevent discrimination and "shopping" the case to a lenient magistrate. *The New York Times* points out for those who may feel that these fines are too stiff and too rigid and may therefore not always be imposed on the guilty, this paragraph in the resolution:

Resolved: That the uniform fines hereby established shall be imposed by the city magistrates equitably on all persons without discrimination and that no exceptions shall be made for other than a fair, legal or truly humane reason to be endorsed on the outside of the complaint.

This means that even in granting a suspended sentence, the magistrate must give his reasons in writing as a permanent part of the record.

% Local Cars in Accidents

"IT IS natural," says the Greenwich, Conn., Chamber of Commerce, "to those of us living in Greenwich to feel that most of the accidents are the fault of out-of-town and out-of-state cars. In many cases out-of-town cars are involved, but figures from the State Department of Motor Vehicles for the first six months of this year show that out of 484 cars involved in 262 accidents, 226 were local cars and 246 "foreign" cars. The responsibility is not shown, but it is safe to assume that, based on previous records, at least 50 of the accidents are the fault of local drivers. It seems that the operator between the ages of 20 and 29 was the most careless during this period, with the group 30 to 39 years of age second. It is not always the new driver who causes the accidents. It is the driver who has been operating for a year or more who becomes careless.

"There are more cars passing through Greenwich on the Boston Post Road than at any point in the United States, and it is the responsibility of the local driver to use extreme care in order that our appalling record of highway accidents and fatalities can be cut down."

Small Cities Going to Radio

MOST of the large cities are of course fully equipped with police radio and are sold to the hilt on its necessity. This same necessity appears to be felt by smaller cities after they have taken the plunge, installed radio, and begun to obtain results. The most recent of these instances is Rahway, N. J., population 16,000, whose two-way system went into service September 12. Less than two weeks later Police Chief C. W. Dumphy said that the system had already demonstrated its worth and had speeded up police activity very materially. In the case of hit-and-run drivers, for example, some of these had been caught before they got out of town, instead of two or three days later if at all.

TWO-WAY POLICE RADIO, WESTFIELD, N. J.

The 50-watt Western Electric transmitter at Rahway police headquarters provides ample power for the area, in which are two Plymouths and one Chevrolet equipped with 5-watt transmitters. Similar new two-way systems are functioning at the New Jersey towns of East Orange, Westfield and Morristown, populations respectively 68,000, 15,000 and 16,000.

Catching Auto Thieves

AUTOMOBILE thefts cost the American public more real money than any other form of crime, and cooperation of the public as well as of police and prosecutor is necessary to stamp them out of existence, a committee of the International Association of Chiefs of Police reported at the 43rd convention in Kansas City September 23.

The committee strongly recommended that every city join the nation-wide network of inter-city radio-telegraph service provided for by the Federal Communications Commission. By this means, it pointed out, not only messages but also fingerprint classifications, checks on license numbers, motor numbers and other information necessary in the apprehension of automobile thieves can be relayed pronto.

Three types of car thieves were classified by the committee, which suggested tactics for their apprehension. In the first classification are the joy-riding kind —most often young boys. Concerning these, the committee says: "The car owner must be made to realize that he plays a very prominent part in aiding the joy-rider to become a real criminal through his failure to protect his property properly by leaving his car unlocked, leaving the keys in the car or not properly garaging it." The committee found that in some sections of the country the police, by tagging automobiles found unlocked, had done much to educate car owners to their duty.

Car thieves who steal automobiles to sell them or their parts constitute the second class. Young boys often are employed by gangs to do the actual stealing because the law deals with them leniently if they are caught. Clever "changers" or "strippers" in the gang obliterate identification marks on the cars. To detect such crimes and apprehend criminals, police departments need specially trained men on automobile theft detail, the committee advised.

Kidnappers, killers, and other criminals who steal cars in order to make quick getaways constitute the third class. An additional class of thefts concerns fraudulent claims on insurance companies. Such thefts, it was pointed out, could be minimized by careful examination of all insurance claims.

The uniform anti-theft law, with its certificate of title feature, and the licensing of used car dealers under strict police supervision have aided in decreasing auto losses by thievery in some states, the committee indicated, advising that they might be adopted to advantage in all states.

Though legislation and enforcement may be made stricter, said the committee, the public "must be further educated to recognize the menace of this class of criminals," whose operations "cost the citizens a greater monetary loss than any other form of crime."

Marijuana Crop Destroyed in New York City

NEW YORK CITY'S annual crop of Marijuana has been practically obliterated by the Police Narcotic Squad aided by WPA workers. This narcotic weed, which is said to grow anywhere and is also imported to New York from the West and Southwest, is sold in the form of cigarettes largely to drug addicts, of whom there are some 15,000 in the city.

MAKE ICY PAVEMENTS SAFE

at lower cost

THE MOST EXTENSIVE PRODUCTION, RESEARCH AND SERVICE FACILITIES IN THE SALT INDUSTRY CAN HELP YOU

Year after year, more and more street and highway officials turn to International Salt Company for help in making icy pavements safe. Rock salt has been proved by research and engineering experience to be the most effective and by far the most economical chemical to use for winter highway safety. Reports of the Maintenance Committee of the Highway Research Board show that, at temperatures most frequently encountered during winter months, rock salt is the most effective chemical tested. Used alone, rock salt is efficient and economical at the rate of ¼ to ¾ pounds per square yard of icy surface. Used with abrasives, it is mixed at the rate of 25 to 50 lbs. per cubic yard.

THESE FACTS PROVE WHY ROCK SALT IS SO EFFECTIVE AND INEXPENSIVE FOR *winter use*

ECONOMY

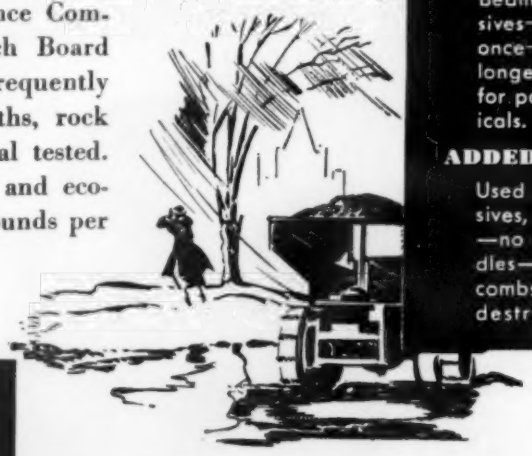
Costs far less than other chemicals.

EFFECTIVENESS

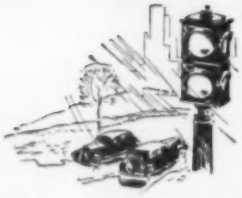
Better and longer lasting embedment action from abrasives—begins to melt ice at once—retains melting action longer. More effective, pound for pound, than other chemicals.

ADDED SAFETY

Used alone or with abrasives, cuts through icy surface—no slippery surface puddles—undercuts and honeycombs ice for quick, easy destruction and removal.



WHAT EXPERIENCED OFFICIALS SAY ABOUT INTERNATIONAL ROCK SALT FOR ICE REMOVAL



"Manholes car tracks, etc., make it impossible to remove all snow by ploughing. We prevent ice formation by using rock salt, and make dangerous streets and crossings safe with rock salt and cinders."—*Street Commissioner, Large Industrial City.*

"I have used rock salt in connection with highway work mostly with sand for slippery roads and around culverts for forty years, and have found it very satisfactory."—*Supt. of Highways, New England City.*

Out of International's three great mines at strategic locations, thousands of tons of rock salt are shipped every fall to town, city, county and state highway officials. International Salt Research Laboratory has worked closely with engineers and officials to find the best and most economical way of making icy streets and roads safe. The results of this study and experience are now in published form. Mail the attached coupon for your free copy.

INTERNATIONAL ROCK SALT

AUTHORITATIVE BOOK

Describes the most effective and economical methods of winter ice control.

INTERNATIONAL SALT CO., INC.
Dept. 10A, Scranton, Pa.

Please send me a free copy of "Make Icy Pavements Safe with Rock Salt."

*Name*_____
PRINT PLAINLY

*Title*_____

*City*_____ *State*_____

City Streets—Airport Planning

Bagdad, ancient residence of the caliphs and scene of many an "Arabian Nights" adventure, has recently purchased a Caterpillar diesel auto patrol to maintain its unpaved streets and regrade the surrounding highways. Here we see the machine building a new road outside the old brick wall which surrounds the city

More Than 1,000 Square Miles of Streets in Cities

THE National Highway Users Conference has recently completed a study of the total mileage of streets in cities of the United States with more than 2,500 population. The study shows there is a total length of 190,090 miles and that the area of these streets is more than 1,000 square miles, approximating the area of the state of Rhode Island.

Airport Location and City Planning

CITIES will do well to recognize the relation between city planning and airport location and thus avoid the predicament of Chicago, whose municipal airport may shortly be declared second-class because of inadequate space facilities, according to Walter H. Blucher, Executive Director, American Society of Planning Officials.

Chicago's airport, which accommodated an impressive amount of air business for years, has become too cramped for the increasing traffic of the new giant passenger transports. Railroad tracks running across one end of the air field allow no room for expansion to provide landing facilities for the large planes, which require a 1 to 7 clearance.

If the airport's location had been decided upon originally with the expectation of greatly increased air traffic and larger planes, it would not have been placed where the bordering property would prevent expansion. "We have been prone in the past to consider the airport separately, and not in relation to other physical factors," says Mr. Blucher. "It has been customary to locate ports on vacant land as near to the city center as possible. If the road to the city was poor or transportation was hampered in other ways, this proximity meant little in terms of speed. New York, for example, is an hour away from its airport in Newark; Buffalo is 40 minutes from the landing field; and Chicago's 'Loop' is 50 minutes from the municipal airport.

"When the airport is considered as an element of the community plan, however, adequacy of highways and means of transportation, and the airport's proximity to the city in terms of time instead of space, will have an important bearing on its location."

Eleven Months of WPA Highway Work in New York

AN average of 29,583 men were employed on the streets and highways of the five boroughs composing the city of New York during the 11-month period from August 1, 1935, to June 30, 1936. One of the major operations of this Division was the track-removal program in Manhattan. Under this program, 178,433 feet of single track—over 33 miles—was removed. This necessitated the removal of 194,144 square yards of pavement, and 165,893 square yards of backfill and grading. The workers then poured 170,907 square yards of 6-inch concrete base for the new pavement, laid 19,827 square yards of asphalt, and set 1,067 feet of steel curb.

The widening of streets providing access to the West Side Highway, the Triborough Bridge, the projected 59th Street Bridge, and the new East River Tunnel, accounted for 49,658 cubic yards of excavation, 48,352 square yards of concrete base, and 448,026 square yards of concrete sidewalk.

The first section of the new East River Drive was begun in August, 1935, and is now more than 70 per cent completed. Over 1,100 men have been employed. They have demolished 4,629,000 cubic feet of structures in the line of the new highway and have done nearly 100,000 cubic yards of grading and fill.

In Brooklyn, the WPA highway forces laid 232,932 square yards of macadam and bituminous surface and 36,000 square yards of asphalt, and shaped and graded 21,604 square yards of dirt roads. The work in Brooklyn includes portions of the new circumferential highway and improvements intended to facilitate traffic to and from nearby beach resorts.

In the Bronx, 232,932 square yards of penetration macadam and hot bituminous concrete paving were laid between January 1 and June 30, 1936. Important jobs include the regrading and widening of Westchester Avenue, on which a 6-inch concrete base was laid for a granite block pavement; the repaving of the Grand Concourse; the construction of Eastchester Road, 60 feet wide, over a distance of 2 1/3 miles; the paving of Pelham Parkway with hot bituminous concrete for more than one mile.

In Queens, special attention was given to bus routes and other heavily traveled thoroughfares. The WPA constructed a total of 126 miles of roadway there in the 11-month period, of which 92.5 miles were of cinders and asphaltic emulsion on residential streets. The paving of Queens Boulevard with sheet asphalt on concrete was completed for 5.5 miles.

The 5,000 men employed in repairing and rebuilding the highways of Richmond did 66,879 cubic yards of excavating and 684,059 square yards of grading, and laid 35,223 square yards of concrete base 6 to 8 inches thick, and 34,657 square yards of 2-inch bituminous concrete topping. A group placing cable and timber guard-rails completed 20,477 feet of rails and strung 40,954 feet of cable.

American Road Builders' Association
Convention and Meeting of
City Officials' Division,
New Orleans, La., January 11-15, 1937

SMOOTHING GRAVEL STREETS IN SPOKANE, WASH.
The newest Caterpillar diesel patrol burns only 9 gallons of low-cost fuel oil per 8-hour day. Two patrols maintain 5 miles of street per day

Supreme IN BETTER CLASS BUILDINGS

STREAMLINE is the original capillary attraction solder type fitting. It is the only fitting that incorporates the true visual inspection feature by which the operator can tell at a glance, without resorting to an actual pressure test, that the joint he has just made is permanently leak-proof.
STREAMLINE

FULL FLOWING Service
"PEAK LOAD" AT ALL TIMES

● In the better class public buildings and in fact, in every form of construction from the modest home to the largest commercial building, STREAMLINE Copper Pipe and Fittings have been installed for their many outstanding advantages.

One of the most important is that STREAMLINE furnishes absolute safety in concealed work where pipe lines are installed behind walls, floors, partitions or ceilings. The hidden leaks, which gradually develop with threaded fittings and rustable piping materials, causing extensive damage to furnishings, inconvenience—and costly repair to the line itself, cannot happen with STREAMLINE.

Whether the installation is for new construction or remodeling, it is a permanently lasting one, as long as the building stands.

STREAMLINE Fittings and Copper Pipe are the ideal materials for water works use; for many applications in filtration plants; in aeration lines and in hearing coils using the sludge digestion system in sewage disposal plants —and for all general plumbing and heating purposes.

Consider STREAMLINE before you decide.

Send for Catalog W-3

STREAMLINE PIPE AND FITTINGS
PORT HURON, CO. MICHIGAN
DIVISION OF MUELLER BRASS CO.

During October we hope you will remember to mention THE AMERICAN CITY

OCTOBER, 1936

Vol. LI, No. 10

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

King Snow Ties Up Town— Then Receives a Knockout

The January 23-24, 1935, Blizzard Put Reading, Mass., Out of Business, But Reorganization and New Equipment Routed Storms of 1936

READING'S fight to free itself from the results of the record blizzard of January 23-24, 1935, served as a warning, and the snow-removal equipment was completely overhauled, new equipment purchased, and a complete reorganization of man-power effected, so that the storms of 1936 were successfully overcome and the streets of the town kept open to full width for ordinary and emergency traffic.

What Happened in 1935

Accompanied by a bitter, driving wind of gale velocity, the snow began to fall Wednesday afternoon, January 23. At 4 o'clock there was an inch of snow, with prospects of an all-night storm, so Highway Department employees were instructed to begin plowing at 6 P.M., at which time 2 inches of snow was recorded.

The plows covered their regular routes once, which included every street in the town, and then started over them again. By midnight the streets previously plowed had drifted full of snow, and the storm had developed into a real blizzard. At this time the heavy plowing began to tell on the equipment.

One of the 3½-ton trucks was the first to go, the transmission giving away. The truck was towed to the highway barn, and repairs started. However, it was 4 A.M. Friday before it again took the road, and at 6 A.M. Friday the transmission again broke down. The truck was again repaired and started plowing at 8 P.M. At 4 A.M. Saturday, the worm and ring gears in the rear end broke. At 6 P.M. Sunday it again took the road, only to break a connecting rod at 6 A.M. Monday, January 28. These four breakdowns on one of the two largest truck-plows then owned by the town seriously handicapped the work of snow removal.

The other 3½-ton truck was also laid up for repairs during the storm, once with a broken connecting rod, and once when the magneto went dead. One of the 1½-ton trucks had to have a new clutch and an entire rear end assembly, including the drive-shaft. The air-compressor truck was in several times for minor repairs, but this and the new 2½-ton truck were the only two pieces of equipment on the road during the duration of the storm and turned in a truly creditable performance.

The new Caterpillar tractor also ran through the entire storm without a breakdown, but the deep snow rendered the wooden plow it dragged ineffective, the plow riding over the snow instead of throwing it aside.

A Warning

The predicament in which the town of Reading, Mass., found itself in January, 1935, is typical of the situation existing in many towns and cities in the snow belt even today. It is hoped that this hour-by-hour story of Reading's losing fight to keep its streets open in 1935 will be an early reminder to other communities to check up on their equipment before winter and purchase new machines and plows before it is too late. Recognize your weaknesses now, reorganize as Reading did, and reinforce your snow-fighting battalions.

Complaints

The snow continued to fall heavily throughout Wednesday night and Thursday morning, clearing off about 11 A.M. Thursday, January 24, with a fall of approximately 18 inches, drifted to depths of 4 and 5 feet in places. By that time the combined efforts of the snow-fighting equipment remaining in operation were concentrated on keeping the main traveled roads passable.

Calls for streets to be plowed to permit doctors to call on sick patients, houses in need of coal and fuel oil, and ambulance cases to be taken to hospitals, were received, and every effort was made to open streets in response to such requests. The sub-zero temperature following the

blizzard caused great anxiety to householders short of fuel and provisions. Over 150 telephone calls were received by the Department of Public Works on January 24, approximately 175 on January 25, and 65 calls on January 26, all from persons living on unplowed streets. Of these calls, 6 were emergency calls, and 8 urgent, all of which were taken care of at the earliest possible moment.

State Help Saved the Day

Thursday at 11 A.M. the large tractor plow belonging to the State Department of Public Works was obtained and, manned by a crew of Highway Department men, opened three more streets. Orders came through for it to go on state work in Billerica, however, and its services were lost throughout Thursday night. It returned early Friday morning and plowed five more streets east of Main Street. Then it went away again on state work and returned early Saturday morning, plowing seven important streets and some short streets near the center of town.

By Saturday morning most of the streets had been opened, and snow removal from Reading Square began. A fleet of hired trucks was used to carry the snow away, and a number of men were employed as shovelers. Work progressed rapidly, and by 5 A.M. Sunday the Square had been cleaned of snow. The street where most of the churches were located was cleared by Sunday, as well as parking places in front of the churches.

Owing to the blizzard and the cold wave which followed, there was no school on Thursday and Friday for any of the grades, and on Monday no school for the primary grades. The school streets were plowed out over the week-end as much as possible, and shovelers cleared the walks and footpaths.

Sidewalk Plowing in 1935

Sidewalk snow-plowing was limited to sidewalks on the main thoroughfare, and at churches, schools and the depot. The snow drifted to such a degree that shovelers were required to break the snow ahead of the horse-drawn plows, and even then these wooden plows could not work efficiently.

A sidewalk snow-plow was procured and attached to the Caterpillar tractor. This proved more efficient than the horse plows, and with a crew of shovelers it proceeded to clear the remaining drifted sidewalks.

An ERA project for emergency snow removing was granted, and the men employed under this project were used in shoveling sidewalks on important thoroughfares.

First Steps to Rebuild Equipment

After the troubles in January, 1935, the Board of Public Works took stock of the situation and went before the town meeting to ask for an appropriation for new equipment and the reconstruction of old equipment. A new 5-ton Walters truck with power drive on all four wheels was purchased, and all the old motor equipment was completely overhauled. Three new snow-plows were purchased, one Frink and one Sargent one-way plow, and a Sargent offset V plow. The old one-way blade plows were improved by adding flare plates to make them more effective in moving snow.

Routes, Drills and Timing

The most important part of the rehabilitation of the snow-fighting forces was the preparation of a carefully considered map on which ten approximately equal plowing routes were laid out. In each case the route itself was studied, and the exact piece of equipment which would operate on that route most effectively was chosen. After these routes had been laid out on the map, typewritten instructions were prepared for the driver of each piece of equipment for each route. These showed every turn on the route and even told how the equipment should be turned on dead-end streets. In a few places at the edge of town cross-cuts were shown over vacant lots from one street to another to eliminate the necessity of back-tracking when plowing had been completed on one street. The drivers were then taken out with the equipment before snow time and drilled in handling it. They were timed also, so that when work began in the winter the location of each plow was known from hour to hour.

Replacement Plan Developed, and Financing Carried in Budget

The second most important phase of the reorganization of snow fighting in Reading was the creation of a definite replacement plan for all Board of Public Works equipment, including snow equipment. The life of this equipment is only from three to five years, so a definite program expressed in dollars was set up with the cooperation of the Finance Committee. This will spread the expenditures for the new equipment evenly over succeeding years instead of forcing an extra budget item of large proportions in a single year. For instance, before this replacement plan was decided upon, the expenditure for new equipment for 1936 was three times what was spent in 1935. In 1936 the Board of Public Works purchased a new 5-ton Cletrac, turned in an old 3½-ton truck and bought a new 5-ton chain drive Sterling truck, and purchased one Frink and one Sargent one-way plow. The purchase of the 5-ton tractor releases the 1½-ton Caterpillar tractor formerly used for road plowing, so that it may be used for sidewalk plowing with a new Baker snow-plow. This tractor will replace three of the fifteen old wooden horse-drawn sidewalk plows.

Moral

Reading, Mass., faced a serious situation and was not afraid to report its troubles in its 1935 Annual Report. But it did not stop there. It reorganized its snow-fighting on an up-to-date engineering basis, budgeted its expenses to eliminate the peak of expenditures and now is able to plow all of its streets in any kind of storm without outside aid. Go thou and do likewise.

Financial Statistics of Cities: 1934 Now Available

The U. S. Department of Commerce, Bureau of the Census, has issued "Financial Statistics of Cities Having a Population of Over 100,000: 1934." The subject matter includes figures on total revenues, governmental cost payments, indebtedness, assessed valuation and levies of general property taxes.

Advance tabulations from certain parts of this report have been published in THE AMERICAN CITY for August, page 91; September, page 115; and in the current issue, pages 83 and 95.

The complete report is available at 5c from the Superintendent of Documents, Washington, D. C.

Resurfacing Saves Old Streets and Cuts Maintenance Costs

By J. W. CLEVELAND
Assistant City Engineer, Department of Public Works, Evanston, Illinois

EVANSTON had a large mileage of old waterbound macadam, bituminous macadam, brick and asphalt-surfaced streets which were deteriorating rapidly owing to the inability of the Street Department's forces to keep them in repair, and lack of funds for rehabilitation. All vehicle tax money available was of necessity being spent to patch worn-out surfaces, and none was available for resurfacing.

A survey of the city streets indicated that it would be financially impossible at present to reconstruct any great amount of the mileage involved. It was also determined by the survey that, owing to the fact that these old pavements would readily adapt themselves to use as a first-class base if protected by a dense wearing surface, it would be uneconomical to tear up and rebuild the greater portion of them.

From the mileage involved approximately 25 miles of pavements, having an average age of 31 years, was selected as having the greatest need for resurfacing. These streets were selected on account of high maintenance costs, their relation to the general traffic flow throughout the city, and the adaptation of the present pavement to a base for receiving a wearing course. Existing curbs and gutters, established grades, financial resources, etc., rendered mandatory the selection of an asphaltic type of wearing surface.

It was estimated that the cost of resurfacing the mileage in question would be approximately $400,000. As it was beyond the city's financial ability to provide funds in this amount, it was decided to apply to the Public Works Administration for a 45 per cent grant to aid in this construction. The application was granted. The city's portion of the cost is to be paid from receipts from the sale of a $200,000 bond issue which was approved by popular vote. The bonds bear interest at the rate of 3 per cent and are retired in equal amounts yearly over a period of five years from motor-vehicle tax funds made available by the elimination of the streets resurfaced under this program from maintenance. The entire bond issue was sold for $209,635.35.

Plans and specifications were prepared by the City Engineering Department, approved by the Public Works Administration Director, and bids were received December 2, 1935. The streets were divided into two classes—primary and secondary. Classification was determined by traffic requirements and thickness and condition of existing pavement. In order to resurface the largest possible area with moneys available, binder was limited to approximately 2,000 tons to be used for filling excessive depressions.

Bids on Five Sections

Owing to the fact that the yardage involved—470,000 square yards—was large and all contractors might not be equipped to complete the work during the construction season of 1936, it was decided to divide this project into five zones and permit bidding in each or all of the zones. The specifications were written for several types of asphaltic mixtures, and bids were taken on each type.

The Arcole Construction Co., of Chicago, was low bidder on all types in all zones and, having satisfied the city with its ability to complete the work within the time limit, was awarded contracts for all five zones.

The type of pavement selected, on which this contractor's

THREE ADNUN PAVERS WORKING ON KEENEY STREET, EVANSTON, ILL.

AN INTERSECTION REPAVED—A CHIP COURSE WAS SPREAD FOR NON-SKID PURPOSES

total bid was $359,000, was a dense graded asphaltic concrete laid hot and requiring no seal coat.

The mixture composition is approximately as follows:

Asphalt	7%
Filler	8%
Sand	40%
Stone	45% (maximum size ⅝")

Specifications for the Asphaltic Cement

1.	Flash Point, Cleveland Open Cup	Not less than 446° F.
2.	Loss on heating, 325° F.	Not more than 1%
	(a) Penetration of residue, in terms of original sample	Not less than 60%
3.	Ductility at 77° F. 5/60	Not less than 100 cm
4.	Ductility at 39.2° F. 5/60	Minimum of 1 less than one-tenth of penetration at 77° F.; in centimeters
5.	Penetration at 77° F. 100/5	50 to 70 (as required)
6.	Bitumen soluble in CS_2	99.5%
7.	Proportion of bitumen soluble in CCl_4	99%
8.	Oliensis spot test	Negative
9.	Fluidity factor	140

Labor Scarce

Evanston's project was of such size as to require at least two large gangs for hand spreading, raking and shaping in order to complete, during suitable weather, the placing of the hot asphaltic mixture.

The city of Chicago, of which Evanston is a suburb, was at the start of the construction season engaged in a street-resurfacing program of such size as to employ all the local asphalt plants and practically all the skilled union labor in this vicinity. This, together with the fact that PWA regulations permit a maximum of only 130 hours per man per month made it impossible to spread, rake and shape the paving material by hand with available labor.

The contractor was compelled to turn to machines for this portion of the work. Several types of asphalt paving machines were tested, and after considerable experimentation it was decided to use three machines of the type now in use. The majority of the streets to be resurfaced vary in width from 24 feet to 32 feet.

It was found that where machines were separated by any great distance, satisfactory longitudinal joints could not be obtained. Each machine was set for one-third the width of street, and the staggered distance between machines was kept between 50 and 100 feet, thus covering the street from curb to curb with one passage of the machines. This method eliminated the cooling of the edge of any lane laid by one machine before hot material was placed in the adjacent lane, and permitted rolling the entire width of the street at one time, thus preventing any indication of the location of longitudinal joints. Spreading machines used in this manner laid a highly satisfactory type of pavement surface and produced a more uniform contour than hand spreading and raking could have given on this type of resurfacing.

The pavement mixture for street and alley returns was placed by hand. This permitted the even and uninterrupted progression of the spreading machines.

Immediately following the machines were three-wheeled and tandem rollers, the three-wheeled rollers being used for initial surfacing, and the tandem rollers for the finishing. The usual combination was two three-wheel rollers and two tandem rollers.

Adjustment of covers and filling of low spots with binder, and other necessary adjustments to the old pavements, are completed several days ahead of the spreading of the surface mixture. This, together with the cleaning of the streets, was performed without any interruption of normal traffic flow. The blocks resurfaced were kept closed to through traffic for a maximum of 24 hours, and to local traffic for a considerably shorter period.

Labor was divided into two 6-hour shifts per day, five days a week, which, with a small amount of overtime, permitted each man to work the maximum hours per month permitted by PWA. A gang of approximately 24 asphalt workers was used with the three machines.

Asphalt Plants All Busy

A situation similar to that prevailing in the labor field was true as regards plants for the mixture of the asphaltic concrete.

The contractor purchased a new modern plant capable of producing from 75 to 100 tons of paving mixture per hour and equipped with a 2-ton mixer and all the modern appliances for insuring uniformity of compositions. Neither the plant nor the machines were operated to capacity, yet the contractor laid from 9,000 to 11,000 square

yards of finished pavement per day. The finished pavements are dense, the surface absolutely non-skid, and, considering the amount of binder material used, have exceptional contours and smooth riding qualities.

Sections cut from the finished pavements show a density of 98½ of the theoretical maximum density; stability tests show a shearing strength of 33½ pounds per square inch by the Chicago Testing Laboratory method, which is equivalent to 1,600 pounds by the Hubbard field method.

Technical supervision of the manufacture and laying of the mixture, together with the testing of all materials and mixtures, was supplied by the Chicago Testing Laboratory, Inc., which furnished inspectors at the plant and on the street at all times. The work was under the direction of George W. Craig, Commissioner of Public Works, and the writer was directly in charge.

Billing and Collecting Sewer Rentals

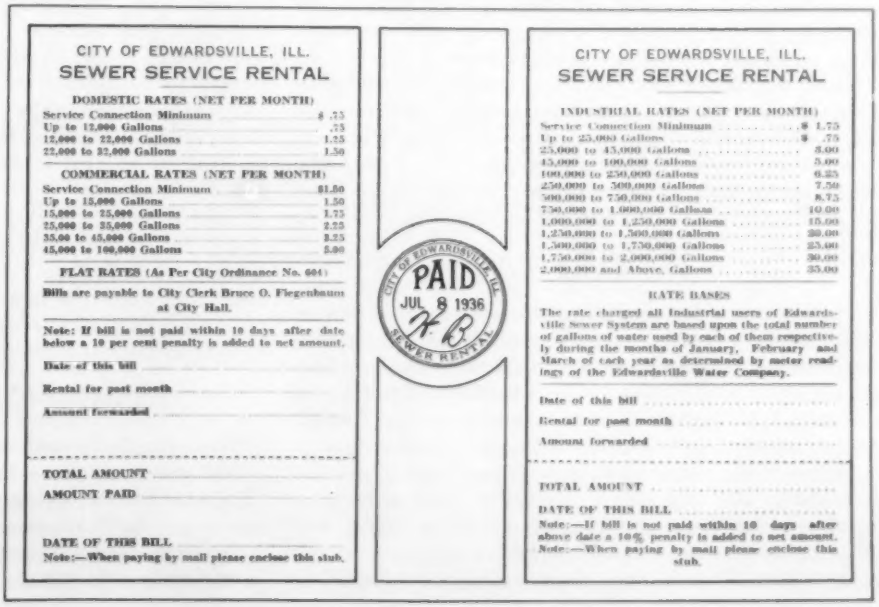
Edwardsville, Ill., Starts Out Successfully Under Unusual Conditions

THREATENED with a series of litigations because of the serious pollution of the stream into which its sewage-treatment plant was discharging, the officials of Edwardsville considered it wise to correct the trouble before the city became liable for the really bad condition that had already been pointed out by the State Health Department. This resulted in the construction of a new activated sewage-treatment plant under Public Works Administration auspices. The new plant and intercepting sewer system cost $199,000, of which $45,000 was a grant from the PWA. To finance the city's share of the cost on a self-liquidating basis, a sewer-rental ordinance was passed and went into effect this spring.

The first problem that confronts a city considering sewer rentals is the basis on which the rentals will be distributed to the different properties connected to the sewer. Flat rates are no more equitable for sewers than for water service connections. If the city owns the water system, it then has a satisfactory method of allocating the charges. But in Edwardsville the water utility is owned by the Edwardsville Water Co. This company, being civic-minded, placed its records at the service of the city, and the monthly sewer-rental charges were based on the amount of water used by each customer for the first quarter of 1936.

The water company also addressed the first post-card bills for the city from its own Addresograph stencils, but thereafter the city had its own machine installed and now does the monthly billing itself. The hand addressing machine places the name and address of the customer on the post-card, and the account number on the stub at the end of the card.

The rates charged are shown on the reproductions of the domestic, commercial, and industrial bills as sent out to customers. About 75 per cent of the 1,700 customers pay as soon as the monthly bill is received, about 15 per cent pay with the penalty of 10 per cent of the bill, and about 10 per cent have ignored the bills entirely. These last will be permitted to accumulate until the amount is sufficient to file at the Recorder's office as a lien, which is one of the provisions for collection in the ordinance. The other method is by civil action, but that will be invoked only in the case of large bills where the amount involved warrants such action. It is believed that before it is necessary to place liens on the properties, many of the owners will see the reasonableness of the charge and pay their bills with the penalty. The ordinance states that the charge shall be paid by the "user," which has caused some difficulty in the case of lessees of property. They claim that there was no



CITY OF EDWARDSVILLE, ILL.
SEWER SERVICE RENTAL

DOMESTIC RATES (NET PER MONTH)

Service Connection Minimum	$ .75
Up to 12,000 Gallons	.75
12,000 to 22,000 Gallons	1.25
22,000 to 32,000 Gallons	1.50

COMMERCIAL RATES (NET PER MONTH)

Service Connection Minimum	$1.50
Up to 15,000 Gallons	1.50
15,000 to 25,000 Gallons	1.75
25,000 to 35,000 Gallons	2.25
35,00 to 45,000 Gallons	2.25
45,000 to 100,000 Gallons	5.00

FLAT RATES (As Per City Ordinance No. 604)

Bills are payable to City Clerk Bruce O. Fiegenbaum at City Hall.

Note: If bill is not paid within 10 days after date below a 10 per cent penalty is added to net amount.

Date of this bill .....

Rental for past month .....

Amount forwarded .....

TOTAL AMOUNT .....

AMOUNT PAID .....

DATE OF THIS BILL .....

Note:—When paying by mail please enclose this stub.

CITY OF EDWARDSVILLE, ILL. SEWER RENTAL
PAID
JUL 8 1936
FB

CITY OF EDWARDSVILLE, ILL.
SEWER SERVICE RENTAL

INDUSTRIAL RATES (NET PER MONTH)

Service Connection Minimum	$ 1.75
Up to 25,000 Gallons	$ .75
25,000 to 45,000 Gallons	3.00
45,000 to 100,000 Gallons	5.00
100,000 to 250,000 Gallons	6.25
250,000 to 500,000 Gallons	7.50
500,000 to 750,000 Gallons	8.75
750,000 to 1,000,000 Gallons	10.00
1,000,000 to 1,250,000 Gallons	15.00
1,250,000 to 1,500,000 Gallons	20.00
1,500,000 to 1,750,000 Gallons	25.00
1,750,000 to 2,000,000 Gallons	30.00
2,000,000 and Above, Gallons	35.00

RATE BASES

The rate charged all industrial users of Edwardsville Sewer System are based upon the total number of gallons of water used by each of them respectively during the months of January, February and March of each year as determined by meter readings of the Edwardsville Water Company.

Date of this bill .....

Rental for past month .....

Amount forwarded .....

TOTAL AMOUNT .....

DATE OF THIS BILL .....

Note:—If bill is not paid within 10 days after above date a 10% penalty is added to net amount.
Note:—When paying by mail please enclose this stub.

POST-CARD BILLS FOR SEWER RENTALS IN EDWARDSVILLE, ILL., AND THE STAMP USED TO RECEIPT BILLS

such charge when the lease was signed and therefore they are not liable. This is a matter which is being straightened out in each individual case and will probably not cause any great trouble.

Two most unfortunate things started the billing "off on the wrong foot": the first bill had to include a two-months charge, which was not received with great joy by the customers; and the day before the first bills went out, May 1, an unusually heavy rain caused flooding of some basements, creating a slight feeling of resentment toward the bills when they arrived. These are cited solely to show that in spite of trouble from unexpected sources a system of sewer rentals can be installed and collections made without undue difficulty.

In addition to the rates based on water consumption as metered and recorded by the water company, there are certain flat rates as follows:

Building or Institution	Monthly Charge
County Court House	$7.50
County Jail	3.75
County Home	7.50
County Power House	1.75
United States Post Office	2.00
City of Edwardsville	5.00
Edwardsville High School	5.50
Columbus School	3.25
Junior High School	4.00
Leclaire School	1.00
Lincoln School	3.25
St. Boniface Catholic School	1.00
Trinity Lutheran School	1.00
Churches and Lodge Halls	1.00

Parsonages are considered domestic users

All bills are made out and collected through the office of the City Clerk, Bruce O. Fiegenbaum, by Harold Brendle. Most bills are paid in person at the City Clerk's office and the bill receipted, the main body of the post-card being returned receipted to the customer, and the stub being retained by the office for entry in the customer ledger.

Odor-Elimination Treatments and Their Effectiveness

By OSCAR GULLANS
Senior Sanitary Chemist, Division of Water Purification, Bureau of Engineering, Department of Public Works, Chicago

THE treatment of surface water supplies for the elimination of tastes and odors has advanced rapidly in the past few years and there are now several methods of treatment available to the water-works operator. Each of these methods has its merits in removing or preventing tastes and odors, some being more selective than others and adaptable only under certain conditions. We are confronted, then, with the problem of selecting the method of treatment that will be most efficient, economical, and best adapted to our needs. To assist in this decision, the method of testing the raw water described here is suggested as a means of determining rapidly and quite accurately the best treatment to use. The results of experiments using this method are also presented.

Since it was realized that the comparison of odor-elimination treatments must depend on a sensitive odor test, considerable attention was given during the past year to improving the test. After a thorough study of the methods in use, the improved threshold test was selected as being the most sensitive and best adapted for this work.

The Odor Test

The procedure for conducting the odor tests, known as the threshold method, consists essentially of diluting the sample to be tested with odor-free water to the point where the odor is just detectable. The sensitivity of the test is doubled by the use of a glass nosepiece by means of which the air, after agitation with the water in a covered flask, is conducted to the nostrils with little or no dilution from the surrounding air. The odor-free water is obtained by passing the regular plant filtered water through a 48-inch bed of granular activated carbon in a laboratory filter, an all-glass apparatus, at the rate of one gallon per square foot per minute. This water is then used for diluting portions of the sample to 250 cc in clean 500-cc Erlenmeyer flasks fitted with glass covers. The cold odor test is conducted at a temperature of 20° to 25° C., the various dilutions being thoroughly shaken and then tested with the nosepiece, starting with the odor-free blank and testing the dilutions in descending order from the highest to the lowest dilution, with frequent comparisons with the blank. The hot odor threshold test is made in the same way by heating the covered flasks in a water bath to 70° C.

The dilution factor is obtained by taking the denominator of the fraction expressing the amount of the original sample in the total dilution. For example, if 50 cc of sample were diluted to 250 cc with odor-free water, the amount of sample in the dilution would be one-fifth and the dilution factor would be 5. The threshold number is the dilution factor at the point where the odor is just detectable, but not detected in the next higher dilution. If an odor was detected at a dilution of one in nine, but not in one in eleven, the amount of sample in the diluted volume containing odor would be 1/10 and the threshold number would be 10. Changes of 20 per cent in the concentration of a sample diluted with odor-free water can readily be detected by the observer with a little experience, using the above method, as long as there is a detectable odor present.

Method of Conducting the Test

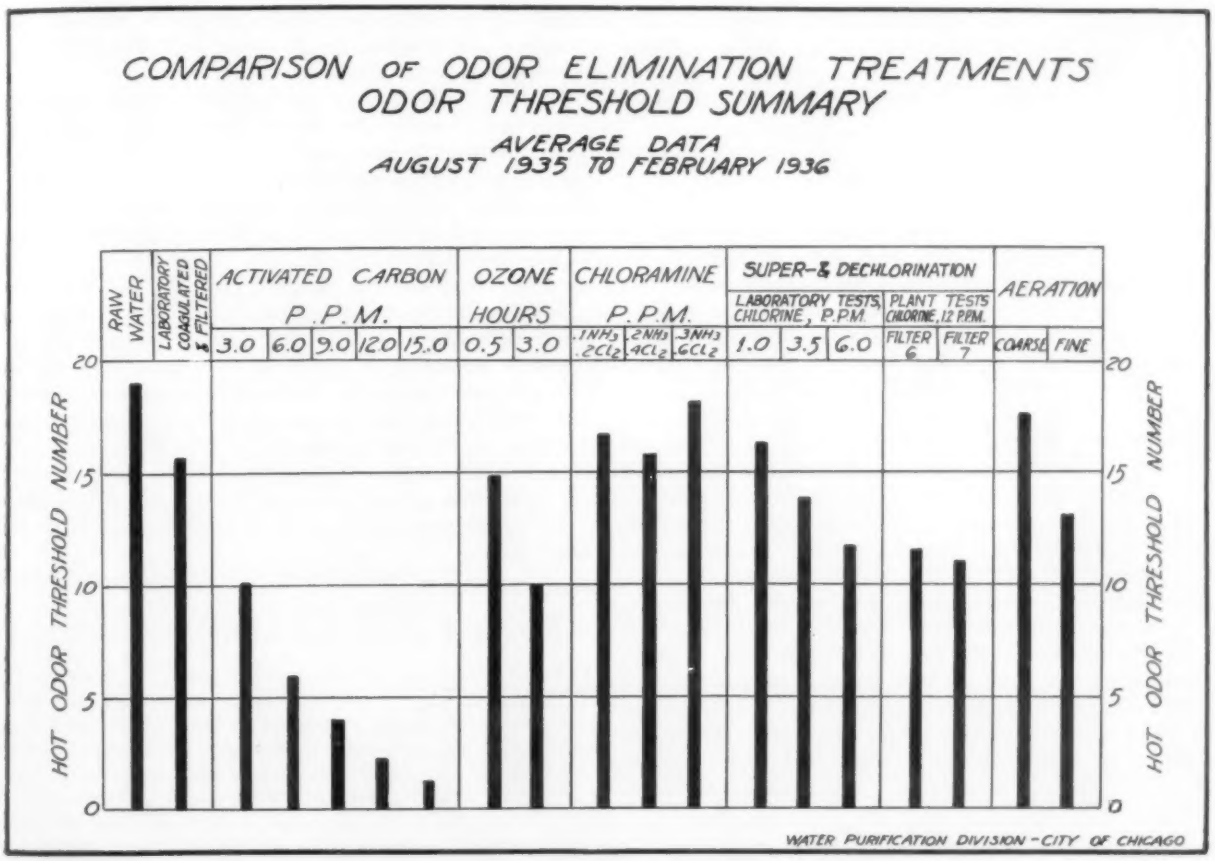
Five extensively used methods of treatment for odor removal were used as a basis for the experimental work. These consisted of activated carbon treatment, superchlorination and dechlorination, ozone treatment, ammonia-chlorine treatment, and aeration. The data selected cover a period during the fall and winter of 1935 on the treatment

of raw Lake Michigan water when objectionable odors were present due to large numbers of micro-organisms. Most of the tests were conducted in the laboratory, except some of the superchlorination experiments and all of the ozone tests, where the regular experimental plant equipment was used.

Laboratory Coagulation and Filtration.—As a control test where the laboratory stirring equipment was used in the experiments, a sample of the raw water was coagulated with 10 ppm of aluminum sulfate in 2-liter beakers by stirring with the laboratory stirrer at 80 rpm for 15 minutes. The coagulated water was then allowed to settle for a short period and filtered through a clean washed cotton plug in a funnel. The odor threshold was then determined on the filtered sample.

water. It would be well for every water-works operator to so calibrate his laboratory equipment to obtain results comparable with actual operation of his plant.

Ozone Treatment.—A standard ozone apparatus was used to treat continuously a stream of raw water at a normal rate of 600 gallons per hour. At this rate the apparatus supplied sufficient ozone to produce a color with ortho-tolidin that was equivalent to about 0.3 ppm of chlorine. Bacteriological tests indicate complete removal of B. coli. The odor threshold was determined on two samples collected at the same time; one allowed to stand thirty minutes before testing, and the other three hours in a covered flask. After standing thirty minutes, no residual ozone could be detected with ortho-tolidin, and at the end of three hours the residual odor was stabilized with little



Activated Carbon Treatment.—In conducting the carbon experiments, measured amounts of the powdered activated material were added to the raw water in 2-liter beakers and agitated with the stirring apparatus for 15 minutes. Each suspension was then coagulated with 10 ppm of aluminum sulfate and stirred an additional 15 minutes, after which the suspended material was allowed to settle and the samples filtered through washed cotton plug filters. The amount of odor remaining after such treatment was determined by the threshold test. The times of contact and coagulation of the suspended carbon in the laboratory beakers were determined by comparative tests run at the same time with the regular experimental plant equipment. With equal doses of carbon and a normal operation of the plant, it was possible to determine what reaction time was necessary in the laboratory to give the same odor reduction on the same change thereafter.

Chloramine Treatment.—The chloramine test was conducted in the laboratory by adding measured quantities of ammonium sulfate solution to 2-liter portions of the raw water in covered flasks, allowing them to stand for 15 minutes before adding the chlorine solution. Each flask was thoroughly shaken after each addition and then allowed to stand for a three-hour reaction period before making the threshold test. The ratio of one part of ammonia to two parts of chlorine was selected from previous experimental data as being the most effective ratio.

Superchlorination—Dechlorination.—In order to determine how much odor reduction might be obtained with superchlorination alone, 2-liter portions of the raw water were treated in the laboratory with 1.0, 3.5 and 6.0 ppm of chlorine and permitted to stand in covered flasks for three

hours. Each sample was then dechlorinated with sodium thiosulfate solution, and the odor threshold determined. The high dosage of chlorine was perhaps beyond practical limits, but the odor reduction at 1.0 ppm did not provide sufficient data from which to draw a conclusion. Referring to the summary graph, it seems that the odor-producing compounds were quite resistant to change on contact with the amount of chlorine added.

As a second part of this experiment, the regular filter plant equipment was used. The raw water was treated with 12 ppm of aluminum sulfate, mixed in the mixing basin for 35 minutes, and settled for 3.5 hours in the sedimentation basins. The chlorinator was set to apply about 1.2 ppm of chlorine to the water as it entered the sedimentation basin. The filtered water for testing was collected from two of the large portable filters, each having 10 square feet of surface and containing 24 inches of standard filter sand. They were operated at a rate of 2 gallons per square foot per minute. The effluent water contained from 0.6 to 0.8 ppm of chlorine, which was removed with thiosulfate before making the odor test.

Aeration.—The aeration test was conducted with equipment that approximated plant aeration conditions. Part of the test was made with a ¾-inch hose attached to the raw-water line and pinched together at the end with a clamp to leave an opening 1/32-inch wide and 1¼ inches long. Under sufficient pressure the water emerged from this opening as a sheet which gradually broke up into large drops. Samples of the aerated water were collected in a large funnel placed at a distance of 10 feet from the nozzle. The water traveled along a curve of about 15 feet.

In the second part of the test, an old-fashioned lawn sprinkler was adjusted to throw a spray of smaller drops of water. The travel of the water through the arc was 10 feet, and the sample collected in a large funnel as before. The spray from the lawn sprinkler was much finer than could be expected with regular plant aeration equipment, but we were interested in learning what odor reduction a more complete aeration could accomplish. The threshold test was made immediately after the collection of both samples. Because of the low cost of operation, in some cases aeration possibly is a worthy aid in reducing the amount of subsequent treatment by a more efficient method. However, the accompanying data indicate that the proper odor reduction could not be obtained with its use on this particular water.

Comparison of Odor-Elimination Treatments

The results of these experiments are shown graphically in the accompanying chart, which represents the average of twelve complete tests selected from the data available. In each case the entire comparison test was run in one day within a period of seven hours, and there was little or no change in the character and odor threshold of the raw water for the duration of the test. Where there was a lapse of an hour or more between tests or the collection of samples, additional samples of the raw water were collected and tested to detect any change. In a few instances there was some change in the raw water, but not sufficient to affect the results.

The results of the actual tests which are shown to illustrate the method of comparing the odor-elimination treatments must not be considered as an exact comparison of these treatments applicable to any water. They are correct for the particular water used in the test at the time and in the manner conducted. The data show that if the odor threshold is to be reduced to 2, it is quite obvious that activated carbon treatment would probably be selected. It is also evident that a combination of superchlorination and filtration or one of the other treatments would materially reduce the amount of odor to be removed by carbon, so that a combination of two or more treatments may prove to be most economical in many cases. A complete study of such application has not yet been made.

There is a difference of opinion as to how completely the odor should be removed. When the odor is reduced to a threshold of 2, at a temperature of 70° C., it is doubtful whether any odor will be detected by the consumer. It may not be essential to reduce the odor to this point, especially with an expensive treatment, but it is believed that the hot odor threshold should be as near this point as a reasonable cost for the treatment will permit.

In order to obtain a good comparison of the treatments, it is obvious that the most precise measurement of the odor thresholds must be made, and the task would be quite difficult by any known method other than the one selected. Since the hot odors are more easily detected than the cold odors, the hot odor threshold point being generally three to five times higher than the cold, the graphs are plotted according to the results obtained from the hot odor test.

With similar equipment, and tests conducted in the manner described here, it is possible for any water-works operator to determine the most effective treatment to eliminate objectionable odors. The comparison test is of great value where there are frequent or seasonal changes in the character of the water; and when it has been determined by test which method of treatment is the most effective under the existing conditions, further tests can be confined to a determination of the most effective dosage or rate of application.

—From a paper presented before the Illinois Section of the American Water Works Association.

Maine Passes Anti-Diversion Bill

BY AN overwhelming vote, in some parts of the state as high as 8 to 1, the people of Maine at the state-wide election last month passed a referendum bill strictly prohibiting diversion of highway funds to other uses. Passage of this bill makes Maine the fourth state to take legal measures to protect highway funds, Missouri, Minnesota, and Colorado already having prohibited diversion of highway funds through constitutional amendments. A petition now being circulated in Massachusetts, if successful, similarly will protect that state's road money from raids.

The anti-diversion bill, one of five questions submitted to Maine voters, drew the greatest vote. While no permanent diversion has taken place in Maine, it has been practice to "borrow" from the highway fund, and there were rumors that one or more groups in the state were planning to "raid" the road fund at the next session of the legislature.

The bill was instituted and sponsored by the Maine Automobile Association with the backing of the Maine State Grange, the Maine Rural Letter Carriers Association, the Maine Hotel Association, the Maine Automotive Trades Association, the Maine Petroleum Industries Committee, the Portland Automobile Dealers Association, the Commercial Motor Vehicle Association of Maine, the Independent Garage and Maintenance Association of Maine, the Independent Retail Oil Dealers Association of Cumberland County, the Maine Independent Oil Dealers Association, and the Maine Commercial Travelers Association.

WPA Workers Fight Mosquitoes

THE two best-known varieties of mosquitoes are the dread Anopheles, carrier of the germ of malaria, and Culex, known throughout the country for its vicious sting, and possessing almost nth degree powers to annoy human beings. To help eradicate these pests, the Works Progress Administration is carrying on 735 projects in 29 states and the District of Columbia, in addition to a separate large project in New York City. The estimated total cost of the projects is $15,772,104, and they found employment for 36,180 men as of May 15, 1936.

For many years, various communities and even some of the states have been waging sporadic wars on mosquitoes with indifferent success. In fifty years of work they had succeeded at least in confining the ravages of malaria-carrying Anopheles mosquitoes to the South Atlantic and Gulf states, including Texas, whereas formerly its breeding places were found in other states as far north as the Ohio River and as far east as New York.

When the Civil Works Administration was started, many communities found mosquito eradication projects ideal to spread employment and urged their being carried forward under the Federal Emergency Relief Administration and the Works Progress Administration. This has been undertaken on such a scale that scientists and health experts believe an enormous amount of coordinated, constructive work is being accomplished that might never have been done had it not been for the Works Program.

It is estimated that 114,000 men have been given employment; that more than 3 million acres of former mosquito breeding ground have been drained; and that about 100,000 miles of ditches will have been constructed. This, of course, is work of a permanent nature and does not include the temporary spraying of oil or Paris green, which was found efficacious in many instances.

National and state health officials and experts are now fairly well agreed that this program played an important part in combating the malaria epidemic of 1934 and 1935. This epidemic has been found to return in a seven-year cycle, and medical observers had anticipated that these years would see one of the sharpest upturns of the whole malaria cycle. That deaths from malaria were actually fewer in these years was accounted for in large part by mosquito eradication projects.

Procedure in Eradication Projects

Under the present arrangement, mosquito eradication projects are started only after thorough surveys have been made by sanitary officers in the regions suspected or known to contain mosquito breeding grounds. If ditches are decided on for drainage, expert supervision is maintained to see that past errors of construction are avoided and that the ditches actually drain the condemned territory. Experience has shown that ditches which do not drain properly become mosquito breeding grounds themselves and are menaces rather than aids.

In the eradication work, some important research has been carried on in connection with construction. One type of research has been the effort to determine how far the two types of mosquitoes fly—their range, in other words; for, obviously, it would be futile to drain a certain section with the knowledge that the ousted parent mosquitoes would simply deposit their larvae in an adjacent section. Salt-marsh mosquitoes have been known to fly as far as forty miles, though the average flight is much shorter.

Experiments are conducted by painting the wings of mosquitoes without hampering their flight so that they may be identified after being loosed. Among other things it has been determined that they fly farthest when in large

WITH PRESERVATION OF NATIONAL HEALTH ONE OF ITS CHIEF AIMS, THE WPA IS WAGING A SUCCESSFUL BATTLE AGAINST BOTH PEST AND MALARIA MOSQUITOES

A particularly unhealthy spot in Savannah, Ga., is attacked (right) by a WPA crew which is digging a large ditch to drain a 2,500-acre swamp where mosquitoes breed

swarms, their numbers evidently giving them strength, while the smaller swarms and the stragglers travel much shorter distances. Scientists are still trying to learn the exact truth about the mosquito's flight, but they have determined six miles to be the average flight.

The next time, therefore, that you feel the bite of the mosquito, whether it be Anopheles or Culex, you will know that its breeding ground is probably within a radius of six miles, and that a countless number of other mosquitoes are probably on the ground at that time depositing their larvae to breed more mosquitoes—usually in swamp land or stagnant water.

The sewage-disposal program of the Works Progress Administration, under which there have been 5,384 projects, at an estimated total cost of $101,027,258, has been an influential factor in mosquito eradication, though its primary purposes were otherwise.

The following are the mosquito eradication projects selected for operation.

Location	Number	Estimated Cost WPA Funds	Sponsors' Contribution	Number Employed During the Half-Month Period Ending May 15,1936
Alabama	35	$654,313	$4,675	895
Arkansas	66	351,352	14,618	752
California	11	56,159	9,042	253
Connecticut	17	211,505	7,710	807
Delaware	12	159,765	5,600	409
District of Columbia	1	13,348	12,000	44
Florida	3	34,913	33,495	253
Georgia	210	816,955	55,290	1,350
Illinois	10	296,891	20,574	3,030
Kentucky	13	44,290	200	128
Louisiana	6	24,907	206	17
Massachusetts	53	567,613	44,700	3,235
Michigan	1	17,836	84	48
Mississippi	36	168,136	2,202	921
Missouri	14	372,035	4,360	1,313
Montana	1	2,143	333	...
New Jersey	12	426,463	15,610	1,030
New Mexico	11	269,048	...	392
New York City	1	5,348,800	...	5,478
New York State	9	707,281	98,182	1,946
North Carolina	51	439,801	25,674	1,829
Ohio	4	35,340	3,344	115
Oklahoma	28	1,069,531	11,461	2,385
Oregon	1	49,987	664	237
Pennsylvania	4	121,022	4,245	222
Rhode Island	11	386,914	58,207	576
Tennessee	15	871,071	5,773	3,668
Texas	47	833,345	65,217	3,473
Utah	6	452,433	27,846	141
Virginia	45	449,651	3,978	1,217
Wyoming	1	3,717	249	16
	735	$15,256,565	$535,539	36,180

State Planning Board Makes Building-Code Survey

SPECIAL interest attaches to the results of a building-code survey recently made by the New Jersey State Planning Board. It was found that of the 564 municipalities in the state, only 180 have adopted building codes.

The status of building codes in New Jersey is of importance because there is no state-wide building-code law which establishes minimum requirements. There are, however, state laws which establish certain requirements for specific kinds of buildings like theaters and assembly halls that protect those municipalities having no code. The state also has very definite provisions covering minimum standards in tenement houses, while the State Department of Labor has jurisdiction over factory-building inspection in New Jersey.

Fifteen of the 180 building codes in New Jersey are less than five years old; while 74 municipalities have building codes which range from five to ten years in age. Codes ranging from 11 to 15 years were found in 59 municipalities and 7.8 per cent have building codes from 16 to 20 years old.

While it is true that some of the cities with old building codes have revised them from time to time to include needed changes, many municipalities in New Jersey and elsewhere should give serious attention to drawing up entirely new and conveniently accessible building codes based upon modern standards of municipal development. This can best be done, the New Jersey State Planning Board suggests, when the building code is properly related to municipal planning and zoning.

Wray, Colorado, Nets $14,000 with Diesels

By R. J. HAYES
Town Clerk

THE accompanying comparative statement of income and expenses of the electric department of Wray, Colo., is from the yearly audit of Ralph B. Mayo & Co., Denver. This town of 1,785 population has had a municipal plant since 1920, and one year ago installed a third diesel engine, bringing total horsepower to 840. The other diesel engines, installed in 1932 in place of steam, are 140 and 280 hp, and all are of Fairbanks, Morse Co. manufacture. The newest engine is 420 hp, six cylinders 14 x 17-inch.

Production from May 1, 1935, to April 30, 1936, totaled 747,470 kwh, compared with 711,800 kwh the year before. Fuel costs amounted to 0.0052-cent per kwh for the most recent year, and 0.0051-cent for the previous year. Prior to the installation of diesel engines, the lowest coal cost was 0.0133-cent per kwh in 1931.

Rates have been lowered twice since we installed diesel engines. Residence rates are 10 cents for the first 10 kwh, 7 cents for the next 15 kwh, 4 cents for the next 75 kwh, and 2 cents for all over 100 kwh. The minimum charge is $1 per kwh.

COMPARATIVE STATEMENT OF INCOMES AND EXPENSES
LIGHT DEPARTMENT OF WRAY, COLO.

	Fiscal Year Ended April 30, 1936	1935
Operating Incomes		
Sales—commercial lighting	$8,864.24	$12,882.77
Sales—commercial municipal power	8,408.55	8,303.47
Sales—commercial heating and cooking	2,113.33	7,638.85
Sales—residential electricity	10,167.78	
Municipal street lighting	3,000.00	3,000.00
Miscellaneous receipts	523.52	235.18
Penalties received	157.75	162.15
Total operating incomes	$33,235.17	$32,222.42
Operating Expenses		
Fuel	$3,880.70	$3,618.64
Wages—plant	4,574.96	3,515.83
Water	44.65	40.05
Repairs to diesel engines	384.21	
Lubricants	440.11	655.86
Auto expense	72.38	51.32
Line maintenance—labor	829.90	1,320.00
Line maintenance—materials	217.40	214.56
Office salaries	981.00	912.00
Office supplies	157.76	105.85
Bad debts charged off	133.18	23.75
Miscellaneous expenses and supplies	666.80	866.57
Total operating expenses	$12,383.05	$11,324.43
Operating Income before Depreciation	$20,852.12	$20,897.99
Provisions for Depreciation	5,147.23	2,628.63
Operating Net Income	$15.704.89	$18.269.36
Other Incomes		
Interest on sewer bonds owned (Wray's)	$568.00	$838.00
Interest on Wray refunding bonds owned	405.00	
Total incomes	$16,677.89	$19,107.36
Other Expenses		
Interest on new equipment obligations	$ 295.15	$1,253.03
Interest on Wray revenue bonds	1,540.00	
Other expenses	31.50	28.45
Amortization of bond discount	636.67	636.67
Depreciation—old plant		3,000.00
Net Income for year	$14,174.57	$14.189.21

Five Rights of the Public in Navigable Streams

By HENRY M. BATES
Dean of the Law School, University of Michigan

AMERICANS are beginning to learn that making a living is not all of life. They are appreciating that the proper use of leisure time for recreation of one kind or another promotes mental, as well as physical, vigor and health, and conduces to sounder judgments and the development of character. Moreover, present world-wide conditions, including unemployment, have made it clear that it is vitally important to the health of the nation that we give serious and intelligent attention to the development of opportunities for wholesome recreation of various kinds.

It must not be assumed that the public's interest in river valleys and in lakes and their surroundings lies wholly in recreation and sports, or the enjoyment of beautiful scenery. All the public, rich and poor alike, are interested in the proper use of navigable waters for transportation, industry, and the production of power. But in the past these commercial interests have been allowed to dominate. It is high time that citizens should address themselves to the task of securing a proper adjustment of these varied interests in our rivers in order to secure the best results for all.

Five rights of the public in its navigable streams are recognized by law. These are the rights of navigation, power, civic and industrial uses, recreation and irrigation.

In current legal discussion the word navigation is being used in two different senses: in Federal law it refers to commercial transportation but in some states the term is coming to cover pleasure boating on small streams as well. This latter use is much more important than the former on inland waters. To safeguard this right requires the maintenance of channel, passageway under bridges and over dams and a certain minimum flow of the stream.

The flow of streams is maintained from rainfall. This is the primary public wealth of every country, on which its very existence depends. The power companies have taken possession of this public wealth, without compensation to the public. In general, their developments have been to the public advantage, but there are certain conditions that the state may well prescribe for any populous area. Among these are: dams should be safe; stumps should be removed from impounded waters; passageway should be provided under bridges and over dams; a certain minimum flow of the river should be maintained at all hours; and water levels should be maintained on power pools with only slight variations.

The right of the public to use its streams for domestic and industrial purposes requires that they be unpolluted. The recreational use of a stream demands first of all that its water shall be unpolluted, but its larger enjoyment can be secured only through constructive planning in its beautification, in the care of its plant, animal and bird life, and the organizing and improving of its opportunities for fishing, swimming, skating, camping, picnicking and other forms of recreation.

To secure and safeguard these public rights and values to the people requires first of all a clear statement in the law, and in the second place the giving to some state department unquestioned authority to enforce the law and develop these resources.

City Playground Project Also Provides Flood Control

AN interesting flood-control and city park improvement is the construction of an artificial lake in the Levings Park district, Rockford, Ill. While the improvement is primarily to provide desirable bathing and boating facilities as a part of this city playground, it will serve a very practical purpose by permitting flood control of Kent Creek. For many years low ground at this point, in the neighborhood of several manufacturing plants, has been flooded each spring owing to the absence of any embankments or other means of holding back the rise of waters in the northern and southern branches of the creek, which unite at this point.

The project consists of a lake covering 35 acres, crossed by a highway by means of a levee and bridge. The first step in this work was the construction of a concrete dam across the south branch of the stream to control the flood waters. During the spring the dam will be closed and the water held back. The flow from the north branch will not be sufficient to overflow the regular banks of the stream. The impounded water will be held during the summer and fall, and with the approach of winter the lake level will be lowered in anticipation of the next season's rains. It is believed that this will provide a sufficient protection to all adjacent low-lying property.

The work of deepening the lake bed was begun under the direction of the CWA, transferred to the Illinois Emergency Relief Commission, and finally to the WPA. The original plan called for pick-and-shovel gangs to handle the entire project without machinery, but the miry condition of the ground made it difficult for the men to find adequate footing in most of the area, and impossible to operate dump-trucks in the excavation.

To overcome this difficulty, Anderson Brothers, Rockford contractors, were given the job of clearing the excavation with a 12-yard Austin-Western hydraulic scraper and tractor. Since the haul was merely to the banks of the excavation, one man operating the scraper and tractor was able to move 1,000 yards of earth per day, an amount which manual labor needed one month to handle.

The entire project, including flood control and beautification of the lake, will be finished within one year. The estimated cost of moving by this hydraulically controlled scraper and crawler type tractor on this job is approximately 7½ cents per yard, including depreciation.

Austin Utilities Earned $165,397 in Last Fiscal Year

By CARROLL L. ELLIOTT
Superintendent, Board of Water, Electric, Gas and Power Commissioners, Austin, Minn.

THE Austin, Minn., Municipal Utilities System began with a water-works bid in 1887. The city bought the electric plant in 1900, installed central heating for the downtown district in 1927, purchased the Interstate Power Co.'s natural gas distribution system in 1935, and for the fiscal year to March 1, 1936, reported net earnings amounting to $165,397.

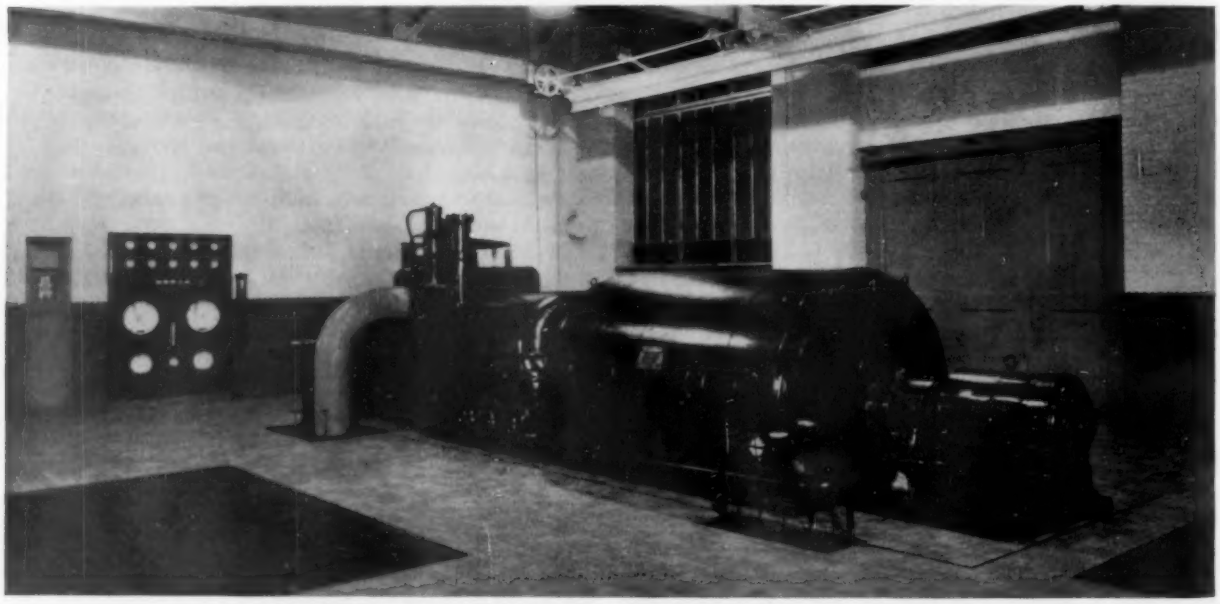
The present equipment consists of two Heine boilers with superheaters and underfeed stokers, generating steam at 285 pounds pressure and 150 degrees superheat. Under contract now for completion this year is a Combustion Engineering 4-drum bent-tube boiler rated at 80,000 pounds of steam per hour at 400 pounds and total temperature of 750 degrees. This boler will be equipped with Elesco superheater, Ljungstrom air preheater, water walls, and a Taylor water-cooled stoker, with provision for gas or oil firing.

There are three turbines—the newest shown in the above photograph. They are a 1,250-kw. Westinghouse of 1915; a 2,000-kw Allis-Chalmers, 1927; a 3,500-kw Westinghouse, 1934.

The total property is valued at $1,933,531 less $681,313 depreciation, giving a new value of $1,252,217, of which these are the principal items:

Boiler room	$311,859
Water-works system	280,514
Electric lines and meters	256,894
Engine room	194,841
Gas system	176,795
Buildings	145,604
Turbine	119,369

These seven items total $1,495,875 and account for 78 per cent of the gross value of the property. Other items are water-works pumps, $24,438; White Way, $84,041; heat mains, $88,819. Earnings and disbursements are listed below for the year ending March, 1936.



3,500-KW BLEEDER-TYPE WESTINGHOUSE TURBO-GENERATOR AT AUSTIN, MINN.

EARNINGS OF THE PLANT

Municipal light and water	$20,950.00
Commercial light revenue	165,645.80
Commercial power revenue	44,062.36
Range power revenue	24,917.20
Penalties	1,656.63
Profit electrical supply sales	215.83
Profit water-works supply sales	341.29
Stove sales profit	478.45
Municipal water revenue	4,050.00
Commercial water revenue	44,397.28
Gas revenue	74,787.66
Steam heat revenue	34,810.40
Miscellaneous	1,855.78
Old bills	570.74
Pole rentals	282.00
Interest	550.00
Country Club rent	300.00
Gross earnings	$419,871.42
Operating expenses	187,383.24
Earned over operating expense	$232,488.18
Less depreciation	67,090.97
Net earnings	165,397.21

Is Overall Tax Limitation Sound Fiscal Policy?

A Warning from the Experience of Ohio Municipalities

By HOWARD P. JONES
Secretary, National Municipal League

FOUR states will vote this fall on proposals to establish overall limitations on real estate taxes. These states are Oregon, Colorado, Washington and Georgia. In addition, Michigan will vote on a proposed constitutional amendment which would abolish the ad valorem method of taxing real and personal property.

Overall tax limitation may be defined as the establishment of a maximum rate of taxation which the aggregate of all taxes levied against any parcel of real property in any one year may not exceed. There are innumerable variations possible, within the scope of that definition, to lessen or increase the severity of the effect. The rate itself may vary from a point which would eliminate taxation on real estate entirely, to a point which would not limit at all because it would exceed the rates required. The commonly used rates for limitation purposes, however, are 1, 1½, and 2 per cent of the valuation of the property. But when the term valuation is used, we may mean "assessed value" or "theoretical full value." The higher the value of the property, the more revenue a given rate will produce; consequently, basing the maximum rate on theoretical full value supplies more revenue and makes the limit less restrictive than basing the maximum on assessed value.

It is also possible to make exceptions in the application of the limit. The most common exception is for debt service incurred prior to the application of the limit. This, of course, favors those units with a high debt and penalizes those with a low debt. It is one way, however, of protecting the interests of present bondholders and easing the first grip of the limit. If all debt service is excluded from the limitation, obviously the limit can be avoided through the unsound fiscal practice of borrowing to pay for current operations, unless extremely stringent debt limitation provisions are also provided for.

Arguments Versus Experience

There are many theoretical reasons advanced in favor of such measures; there have been many theoretical arguments advanced against such measures. We have had considerable experience with such laws, however, and it would seem that experience rather than theory should furnish the answer to the question, "Is overall tax limitation a sound fiscal policy for a state to adopt?" Since space is lacking to discuss the effect of this policy in all the states which have tried it, let us select that state for scrutiny which has had overall tax limitation longer than any other state. In 1910 a law was passed in Ohio placing an overall limit of one per cent of the assessed valuation of property upon the amount of revenue that could be raised by taxation of real estate. Since then, Ohio has never been without some form of overall limitation, although the law was so liberalized in 1923 that for ten years thereafter it had little or no restrictive influence upon the financing of local government.

The story of the decade following the adoption of this law was the story of a continuous appeal for relief from its provisions. Such relief took two principal forms: gradual relaxation of the limitation through amendment of the law; postponement of obligations through the accumulation of floating debt, the ultimate funding of such debt and the continual refunding of bonded indebtedness as it matured. During these ten years all sorts of unsound financial practices were resorted to: sinking-funds were robbed to maintain current services; budgetary procedure which had begun to be established on a sound basis in Ohio cities was largely disregarded; the practice of appropriating in excess of revenue became standard.

Summarizing the experience of these ten years, the most obvious conclusion is that, paradoxically, tax limitation did not limit. From 1912 to 1922, the total levy of ad valorem general property taxes in Ohio increased approximately 200 per cent, from $76,697,000 to $224,423,000. The property tax burden per capita in Ohio during this period jumped from $15.45 to $37.63, a percentage increase of 143. This compares closely with the average for the country as a whole. In 1912, the grand total of general property taxes in the United States was $1,349,841,000. In 1922 this figure had reached $3,503,725,000, a percentage increase of 158. In 1912 the average per capita tax was $13.91 and in 1922, $32.23, a percentage increase of 131. Thus it may be seen that Ohio with its stringent tax limitation had a greater per capita tax burden during this period than the average for the nation as a whole, and a greater percentage of increase from 1912 to 1922. There is no way of knowing, of course, whether the tax burden might not have been considerably greater without tax limitation. Nevertheless, it is evident that Ohio's tax limit law did not prevent the tax burden from substantially increasing.

Tax Limits Force Mounting Debts

Meanwhile, the local units of government were postponing indefinitely disbursements for current expenditures, funding the floating debt thus acquired, and refunding in wholesale lots obligations as they fell due. It is thus possible, although it is not subject to statistical proof, that instead of resulting in a net saving to taxpayers, the policy of tax limitation may have increased total costs through the additional bill for interest on indebtedness. Certainly,

a huge charge for operations that should have been paid for currently was passed on unjustifiably for subsequent taxpayers to settle. Raymond C. Atkinson, admitting that it is impossible to estimate accurately the total burden saddled upon subsequent taxpayers by this decade of rigid limitation, hazards a guess that it approximates $100,000,000.* In any event, the amount is substantial and contributed an unwarranted if indefinite weight to the debt burden as of 1922.

In 1912, the debts of state and local governments in Ohio, less sinking-fund assets, were $239,667,000. Ten years later they had reached $669,443,000, an increase of almost 200 per cent. The per capita debt in Ohio for the same period jumped from $48.27 to $112.25, a percentage increase of 135. The average corresponding per capita figures for all units of state and local government in the United States were $39.37 in 1912 and $79.92 in 1922, an increase of about 100 per cent. Thus, in the case of debt as well as property taxes, Ohio during this period is seen to be considerably above the average, both for relative amount of debt and percentage of increase during this period. This, of course, might have been anticipated, since Ohio in that period was a rapidly growing state of many cities with a consequent necessity for extensive public improvements. The difficulty of enforcing a rigid tax limit in the face of a constantly mounting debt, however, is obvious. Ohio ultimately was forced to relax its limit, but the interesting observation to be made here is that even when the law was in force, it did not limit, forcing officials of local government instead into adopting unsound fiscal policies and devious subterfuges.

Yet Ohio in 1933 adopted an initiated amendment to its constitution imposing once again a severe 1 per cent limit. Unfortunately, history is repeating itself in Ohio, and its cities are apparently going through the same process of postponing obligations because of lack of revenue that they went through twenty years before.

The great increase in bonded indebtedness that resulted in Ohio from limitations imposed by the Smith Law of 1911 led to the passage of a uniform bond act in 1925 regulating and controlling future bond issues. No bonds could be issued for current expenses. Necessity has forced the removal of these restrictions, and during the last three years political subdivisions have been permitted to issue deficiency bonds if approved by the voters. Many cities have been forced to take advantage of this permission. One of these was Dayton, and at the special election in August of 1935 the deficiency bond issue was defeated. No other alternative was left except to curtail services. Beginning September 1, the city closed three fire-engine houses, dismissed 150 employees, turned out street lights after midnight, and imposed a 27 per cent salary cut. These economies still left the city facing a deficit of more than $200,000 at the end of 1935, which was financed through a deficiency bond issue approved at the November election. Obviously, this kind of thing cannot continue long.

Dayton's experience may be considered particularly significant, as the city since 1914 has been operating under the council-manager form of government and authorities are agreed that Dayton is and has been for many years one of the most efficiently managed cities in the country. In 1936 the city must operate on a tax rate even less than 1935, under the provisions of new legislation generally referred to as the School Foundation Program.

Do Taxpayers Really Benefit?

Generally speaking, local government during the depression has tightened its belt to the last notch. Further substantial curtailment of local governmental services may be regarded as impossible except in isolated instances. This is not to say that these services cannot be rendered at lower cost through intelligent reorganization of local units. It is to say that, barring reorganization, there seems no way further to reduce the cost of local government. This being true, tax limitation, where it means the establishment of a rate substantially below the present rate, must be followed by (1) further sacrifice of services, (2) reorganization of local government to render the same services at less cost, (3) the location of new sources of revenue to replace those lost through the property tax, and/or (4) the postponement of current obligations. Number 2 is, of course, the desirable solution to the problem. Unfortunately, it is the most difficult of the four to get adopted. In the search for new sources of revenue, citizens might well give serious consideration to whether the replacement tax may not force them to pay more than they did before. For, however poor a measure of ability to pay real property may be in these days of intangible wealth, it is still one of the best we have.

These are realities which must be faced by voters in states where tax limitation will be an issue this fall. There are others for which space is lacking here. One that should be mentioned before closing, however, is that tax limitation endeavors to place all communities in the same mold. Regardless of local needs or desires, the tax rate of each parcel of property must be the same.

Tax limitation for the average taxpayer is a delusion and a snare. It is a self-shackling, with none of the anticipated benefits realized. Loss of governmental services and mounting debt soon bring the citizen to a realization of the mistaken pathway he has chosen. Those states at the crossroads which are to vote on tax limitation in November may well pause to consider the experience of predecessors such as Ohio, the unfortunate guinea pigs in an unsound taxation experiment.

* For an excellent study of this period, see *"The Effect of Tax Limitation Upon Local Finance in Ohio,"* by Raymond C. Atkinson (1923).

Popularity of Long Island State Parks

DURING the past season over 5,750,000 people visited the state parks on Long Island. This is an increase in attendance of 10 per cent over 1935. The largest attendance in 1936 in any state park on Long Island was at Jones Beach, with over 3,800,000 visitors.

The revenue received in the past season by the state for the use of the various special facilities was over $645,000, which was materially larger than the receipts taken in during 1935. This is exclusive of the tolls totaling $210,000 collected by the Jones Beach State Parkway Authority on the causeways leading to Jones Beach which are used for the maintenance, operation and payment of interest on the $5,050,000 Federal loan which was used for the construction of these causeways.

Resurfacing Bituminous Streets in Cincinnati

Two Crews Kept Constantly at Work with the Heaters to Insure Smooth Patches

By THEODORE REED KENDALL
Engineering Editor, THE AMERICAN CITY

WHEN we drove along U. S. 52,—Harrison Avenue to residents of Cincinnati,—we noted a surface heater at work, with its attendant operator, rakers, shoveler and truck. Stopping, we interviewed the operator, and later the foreman, the Supervisor, and the Superintendent.

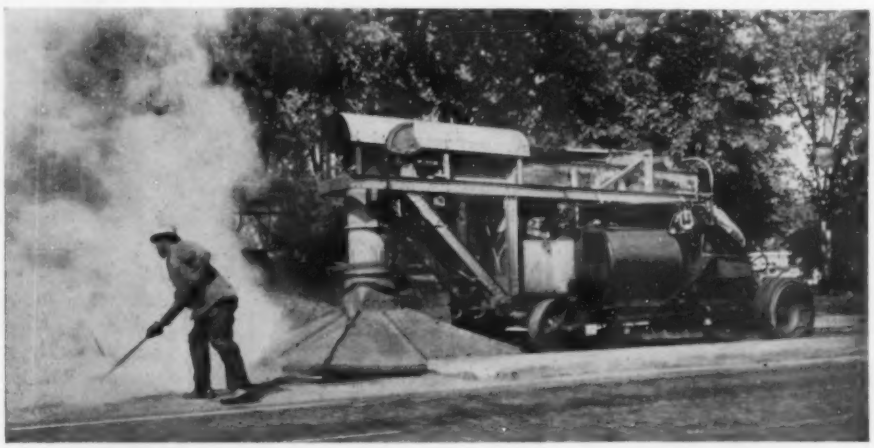
The Highway Maintenance Division of Cincinnati has had to contend with the same reduced budgets that have been experienced by practically every city in the United States, but it has not yielded to the temptation to let street maintenance get "sloppy." Work has continued with the same care and coordination that characterized its progress in better times. There have been cases of repair and resurfacing of a higher type of pavement with a lower type, which is not good practice, but it was a question of saving the investment in the better pavement, and funds were not available for the more expensive materials to do the resurfacing.

The city maintains two Super heaters with the necessary personnel for "burning" or heating sections of sheet asphalt and other hot-mix pavements that have cracked or otherwise failed at the surface, so that patches may be made which will stand the punishment of the continuous heavy traffic on its many thoroughfares. These heaters do not see the city yard and shops from the beginning of spring operations until winter closes the season of surface repairs. In fact, last winter the work was continued so late that one of the surface heaters was caught on a hilly section in a bad sleet storm that rendered it unmanageable—but that is the exception rather than the rule; it does show, however, the zeal with which the question of repair is approached in the Crescent City. The two surface heaters are stored at night and over week-ends on side streets where they will be out of the way and where the attendant roller and other equipment may be concentrated and a single watchman left to protect the machines from the inquisitive tampering of youthful Edisons.

The heaters start out on the street at 7.30 in the morning, although at times they are out as early as 6.30 when it is necessary for them to work on Saturdays. The work is limited to 8 hours in any one working day. There is a foreman for each of the heaters and the paving crew that follows. The heater crew consists of the heater operator, two rakers and a shoveler.

Heat is applied under the 8-foot square hood swung close to the pavement for a period of three to five minutes, depending on the temperature and the mix of the pavement as well as the depth to which the patch is to be made. A mere "scratch" patch can be heated in as little as two minutes, but that type of work does not pay and is frowned upon in Cincinnati. To secure an average "burn" of ¾-inch in an ordinary pavement requires heating for about five minutes. The material raked out is shoveled into the service dump-truck, hauled to a nearby unimproved street and spread by a member of the crew, who remains there throughout the day. This material spread hot and to a depth of about one inch has been responsible for the elimination of a considerable mileage of dusty secondary streets in the last few years.

The heater is moved about by the Fordson tractor on which it is mounted, while power for the operation of the fuel pump for the heater and the blower is furnished by an auxiliary LeRoi gasoline engine. The fuel-oil tank holds 275 gallons, the gasoline tank for the tractor holds 20 gallons, and the engine gas tank 12 gallons. The outfit is refueled by a tank truck which visits it as needed, from



THE SURFACE HEATER IN USE IN CINCINNATI, OHIO—RAKING AN AREA JUST "BURNED"

the company holding the contract for this service. Complete records of the fuel oil delivered are made on the daily reports and through the receipt given to the delivery truck man.

The heater can "burn" from 500 to 700 square yards of pavement a day, working 8 hours. The men working both with the heater and with the paving crew are equipped with wooden sandals to protect their feet from the heat of the pavement. As a protection to property, the heater is taken out the first thing in the spring and worked on those streets where there are overhanging trees or flower gardens between the curb and the sidewalk. This precaution is necessary because the tremendous heat generated by the machine withers the leaves on the trees immediately overhead or destroys the flowers near the curb. Later in the season the heater works in those sections where there are no delicate plants or leaves to be affected by the machine.

Curbs are another source of trouble. The many miles of sandstone curbing in Cincinnati are readily spalled by the heat from the machine when working close to the curb. This is overcome by the use of a shield carried with the machine. It consists of a piece of sheet metal about 12 feet long and bent in the form of an L so that it covers the face and top of the curb where the heater is working. Two handles at the ends make it possible for the rakers to move the shield with their rakes as the work progresses.

Placing the Patches

The material for all patching is prepared in the central mixing plant owned by the city and described in THE AMERICAN CITY for January, 1936. It is hauled out to the work in 4-ton Biederman or Schacht trucks equipped with St. Paul hoists, and reaches the job with a residual temperature of 325 to 350 degrees. The hot mix is dumped directly onto the street and then raked, luted and tamped, followed by rolling. The paving crew consists of two rakers, two shovelers, two tampers and one smootherman or "ironer," one lute man, one paint man, one back man, and the man operating the 8-ton Buffalo-Springfield gas roller. Other equipment consists of a Littleford kettle for heating the material to paint the edges of the patch, and a Littleford fire wagon to heat the irons.

After the edges of the holes to be patched are cut square, they are painted with the hot asphalt, and then the patching material is shoveled in and raked. Great care is taken to see that the edges of the patches conform to the pavement adjacent. The lute man uses his lute as a straight-edge to this end.

In general, sheet asphalt, or sheet asphalt on stone-binder if the depth of the patch exceeds one inch, is used for patching. Asphaltic concrete, however, is used in all locations where traffic is restricted to a definite lane, such as shoulders adjacent to loading platforms, in order to prevent any creeping or rutting of the surface. All edges of the patches are ironed with the hot irons to insure a seal with the old pavement. The patches are dusted with silica sand dust, which is swept over the surface just after rolling. This sand provides better traction for rubber-tired vehicles in wet weather.

In order to minimize interference to and from traffic in the business section, all repairs to asphalt streets in that section are made at night from 10 P.M. to 6.30 A.M. The work methods are identical with those used in daytime operations. Light is furnished by two gasoline-engine-driven electric generating plants, each equipped with four 1,000-candlepower lights.

Techwood Homes, Atlanta, Is a Working Reality

THE first national public housing project to go into operation in the United States was dedicated in Atlanta, Ga., on September 1, with one group of the 604 units of Techwood Homes already occupied. Techwood Day was proclaimed by Mayor James L. Key, and the program of speakers at the dedication ceremonies included also Dr. M. L. Brittain, President of Georgia Institute of Technology, as presiding officer, Colonel Horatio B. Hackett, Assistant PWA Administrator, D. A. Calhoun, District Manager of PWA's Housing Division, which built Techwood, and others.

Covering eleven blocks, Techwood Homes is located along Techwood Drive, a main thoroughfare leading from Atlanta's business district to one of the principal residential sections. It is designed as a neighborhood in itself, with buildings grouped around grassy courtyards and play areas. The structures cover only about 25 per cent of the 25-acre site, and there is space for stores, social units, and central laundries. There are three-, four-, and five-room apartments, and five- and six-room houses. Ample window space assures plenty of sunlight for each living unit, and cross ventilation has been required for each dwelling. The buildings are oriented so that they receive maximum advantage from prevailing breezes.

The development was constructed under a PWA allotment of $3,101,000 and replaced one of the worst slum areas in Atlanta. The contrast between the old and the new is shown on the opposite page. Complying with the stipulations embodied in the George-Healey Act, the Housing Division's tenant selection is restricted to families of limited income now occupying substandard housing. No applicant is accepted whose income exceeds five times the rental charged per dwelling unit. Monthly rentals range from $16.40 for a three-room apartment to $27.85 for a six-room row house. By September 20, 321 tenants, with an average weekly income of less than $23, had been certified as eligible, and leases had been signed for 32.1 per cent of the capacity of Techwood Homes. Nearly 80 different occupations are represented; most numerous are the clerks; service men are second, followed by office helpers, salesmen, small business operators, and a miscellaneous list.

The rejection of a large proportion of the applications was due to the fact that the applicants' annual incomes were such that they could afford standard housing supplied by private enterprise. "When private enterprise can house those families under safe and wholesome conditions, we will have absolutely nothing to do with them," said Howard A. Gray, Director of Housing. "The Housing Division has never had any intention of competing with decent private housing or real estate interests that provide good housing, and does not now intend to do so."

DESOLATION AND HEALTH MENACE MARKED THIS SITE IN ATLANTA BEFORE THE TRANSFORMATION SHOWN BELOW

TWO VIEWS OF A SECTION OF PWA'S NEW TECHWOOD LOW-RENT HOUSING IN ATLANTA, GA.

Manganese Ore for Iron and Manganese Removal

By W. G. KIRCHOFFER
Consulting Engineer, Madison, Wis.

WATERS bearing iron and manganese can be logically divided into three main classes:

(1). Those waters which begin to precipitate iron and manganese on exposure to air, usually hard waters containing carbonates or sulphates or both; iron may be in hydrate form.

(2). Those waters which will hold iron and manganese in solution indefinitely even when aerated, the elements usually combined with organic acids and appearing in the colloidal form.

(3). Those waters which contain iron or manganese or both in each of the above forms and therefore, after aeration, deposit a part, but not all, of the element, which cannot be removed entirely by simple filtration through sand.

The process to be discussed applies more particularly to the second and third types of waters, but can be used on the first type if desired.

Troublesome Twins

Waters containing manganese are more difficult to treat than those which contain only iron. Manganese is seldom found alone.

Where the same processes are effective for both iron and manganese, the reaction is slower for manganese. In a water containing both iron and manganese the iron will be found deposited near the source, while the manganese will be found on the outskirts of the system and in dead ends. Manganese is a much more troublesome element than is generally supposed, and is so nearly like its companion, iron, in its effects that often its presence is not discovered until it is learned that ordinary methods are ineffective.

When present with iron, organic matter, carbonic acid or organic acids, manganese is a most difficult element to remove. It has been found that the higher oxides of manganese appear to have a very favorable effect on the removal of those of a lower order, so that if water containing manganese is applied to a filter in which higher oxides have been precipitated, a large percentage of the manganese in the water will be removed. Such a condition can be brought about by treating the filter with manganese sulphate, sodium hydroxide and a hypo-chlorite, or by letting the filter become automatically coated, as it will do in most cases if not disturbed for a long time.

Removal by Catalysis

The writer, and other investigators, have tried pyrolusite, a manganese dioxide rock, to aid in the removal of this most troublesome element. This process, in chemical language, is a catalytic one, in which the removed manganese acts as the catalyst. It was formerly thought that this action was brought about by the mere contact of an agent, but it is now believed that reactions are attended with the formation of an intermediate compound or compounds such as the higher oxides of manganese, so that by alternate composition and decomposition the agent is left unchanged.

I first tried out this process at Wausau, Wis., where there is a water of the "third" type, low in alkalinity and pH, but high in iron, manganese and organic matter. As the water needed aeration, a tray aerator, with manganese dioxide rock placed in the trays, was tried out. It did not remove all the iron and manganese, but aided greatly in their reduction and fiocculation. A plant using this principle, of a capacity of 5½ million gallons per day, was constructed, but it had to be followed by the use of lime and alum to take out the portion held by the colloidal organic matter.

The sand filters which followed the chemical treatment have since become coated with the higher oxides of manganese to such an extent that the chemical dosage has been cut approximately 25 per cent. In time the tray aerators containing the manganese became badly clogged with the more or less freely bound elements, making it difficult to keep the aerators in service.

Since the plant was built, I have experimented with beds of pyrolusite direct from the mines in sizes ranging from ½ to 1 inch. This material was placed in a closed vessel filled with the water to be treated, and air in finely divided bubbles was applied at the bottom. It required only 20 minutes of such aeration, using only 0.07 of a cubic foot of air per minute per square foot, followed by sand filtration, to remove the elements to less than 0.1 ppm, and 10 minutes' aeration removed them to a satisfactory limit.

Crushed Ore and Synthetic Ore Effective

Experiments have been run in Madison by a laboratory using the manganese ore crushed to the size of coarse filter sand. It was found that the process worked successfully until the filter became loaded with the iron and manganese deposits, and then it was difficult to back-wash the filter owing to the weight of the media.

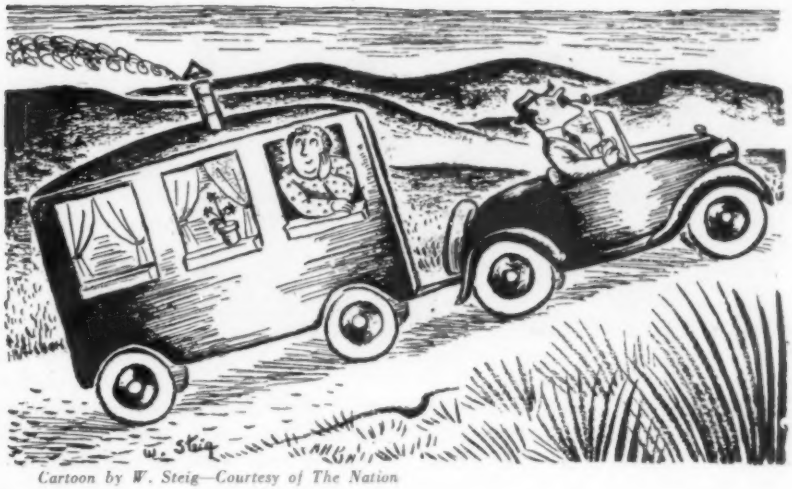
It has been found that equally good results can be obtained by using synthetic material as can be had with the genuine ore. For instance, I took a quantity of anthracite coal of filter sand size about 0.55 mm, coated it artificially with manganese, and, even without aging it, it worked fairly well. I have also used coke with upward flow of water and reduced the iron content to 0.1 ppm without filtration.

A synthetic mineral was used in a pressure filter for the removal of iron and manganese from the water supply at the Sacred Heart Hospital, Tomahawk, Wis. This water is similar to the Wausau water and would not yield up its iron and manganese by ordinary aeration, sedimentation and filtration through sand. The plant is giving entire satisfaction. It has been found that it is necessary to have a small amount of oxygen present when using the catalytic process, and if oxygen is not present in the water, a small quantity will have to be added.

—From a paper presented before the American Water Works Association.

Trailers and Cities

By WILLIAM H. LUDLOW



Cartoon by W. Steig—Courtesy of The Nation

TRAILERS are taking America by storm. With amazing rapidity more and more Aladdins, Covered Wagons, Nomads, Vagabonds and Kozy-Coaches are appearing behind the family car on the highways, along the curb in the heart of the cities, and at the popular resorts and National Parks. Estimates put the number at a quarter of a million, or approximately 1 to every 125 cars on the road. Recently the demand for trailers has grown so rapidly that the industry has been working at capacity. Many plants have doubled or even tripled their output in the last year.

Undoubtedly within the next few years millions of people will be using trailers for vacations and extended trips. The American Automobile Association estimates that the first million of these will be cruising in trailers by the end of the year. Hundreds of thousands of people, especially retired older couples whose children have left home, after some trailer vacationing experience, will sell the old homestead, as many already have, and "get free," free of taxes, free of fuel bills, free of cold, and free of heat. For them it will be Florida or California in the winter and Maine, Minnesota or the Rockies in the summer, with numerous visits to children and relatives in between. Added to these permanent trailerites, will be thousands of migratory laborers, traveling salesmen and others whose work makes it impossible for them to live in one place with any degree of permanency. Already there are an estimated 100,000 people whose only home is on wheels, and their ranks are increasing at an astonishing rate.

Meeting—or Thwarting?—the Demand

It seems, then, that trailer homes are no passing fad like miniature golf, but have come to stay. Selling as low as $300 to $500, with second-hand ones even less, and with $50 a month covering all expenses for a couple if they do not move too fast, many people find it cheaper to live in a trailer than at home. The glamor of "seeing the country," together with almost continuous outdoor living, offsets the smallness of accommodations for the many thousands that follow the sun. As Gilbert Seldes says, "We are facing a movement of population beside which even the Crusades will seem like Sunday School picnics."

When we think of hundreds of thousands of homes moving around the country at will, we become appalled at the possible effects on our cities, effects perhaps as far-reaching as those of the motor car or even the industrial revolution. The motor car demanded paved roads, and it got thousands and thousands of miles of them at public expense. The factory system brought in by the industrial revolution demanded many workers living close to the plants, and it got them, mostly huddled together in jerry-built shacks or tenements. The trailer house demands parks in or near cities, at resorts and points of historic and scenic interest. One way or another it is going to get them, scattered all over the country.

In California, "No Trailers Wanted" signs are appearing at some of the tourist camps. Why should they accommodate trailers at 25 to 50 cents a night when the main business is renting cabins at a dollar or two? The more trailers, the fewer cabins they will rent. So also runs the psychology in many cities. If people can live in trailers in our cities, many of them will not live in houses. Landlords may get less rent; mortgages and taxes may go unpaid; mortgage companies and municipal tax officials may find their financial problems increasingly difficult. Consequently the attitude of many cities, like that of some California tourist camps, is "No Trailers Wanted." Washington, D. C., takes this position to some extent. No trailer parks are allowed except the municipal tourist camp on the banks of the Potomac. There local trailers are prohibited, and no outfit may remain more than two weeks. Many other large cities in which real estate interests are strong take similar attitudes. Some smaller towns, however, such as Sarasota, Fla., and Huntington Beach, Calif., have their municipally owned camps where trailers are welcomed. In such small towns, local merchants realize that the increased trade brought by trailerites amounts to substantial totals.

Some trailer owners consider even a dollar a week charge, as at Sarasota, too high. If the cities are unfriendly, they can find their own parking sites. This winter the Trailer Owners of America, a recently organized association modeled to some extent after the American Automobile Association, will open a complete

THE TRAILER CAMP AT SARASOTA, FLORIDA

trailer city a few miles from Sarasota. "Trailertown," as it is called, has been laid out in a dead subdivision left from the Florida real estate boom. No rent or taxes will be charged members of the association, who may stay there as long as they wish, but expenses will be met out of the percentage concession charge to merchants operating at "Trailertown," selling from their own stores on wheels. The association contemplates eventually operating a number of "Trailertowns" scattered throughout the country.

Location and Layout of Trailer Parks

It seems likely, then, no matter what efforts cities may make to discourage trailers and trailer parks, they are coming. Some of the questions that arise are: Where should parks be located in a city? How should they be laid out? Who should run them? How should they be taxed? In most cities locations as close as feasible to the central business district seem to be the best. Perhaps a marsh can be filled in or the old fair grounds made over. In some cities what more effective use could be made of cleared slum areas close to the center than sites for trailer homes? Land could be held thus temporarily until wanted for some more permanent use. In some cities trailer parks will have to be located on the outskirts, many of them in small towns outside the boundaries of the city. There, if the large city is hostile, they will find sympathetic local governments that will try to attract them in order to capture their trade. Thus the suburban trend and the tendency of the central portion of many cities to lose population will be re-enforced.

To date, trailer camps have not all been noted for their sightliness. However, now that many new trailerites are not in the "tin can tourist" class—in fact, include several millionaires—the attractiveness and amenity of the new trailer parks will become increasingly important. In Washington, the camp in Potomac Park is surrounded by a close-set row of Lombardy poplars, effectively screening the camp from the park and aiding in making the camp itself more attractive. Many camps are laid out in streets with plots perhaps 25 by 35 feet, so that the trailerite will not look right into his neighbor's window. Trees supplemented by proper planting add much to the general appearance of a trailer park, just as they do to an ordinary home community. Minimum facilities include toilets, washrooms, showers, water hydrants and electric outlets, to which are usually added a social hall, various types of recreation and amusement, and other facilities for social and community life. Stores, cafeterias, restaurants and laundries are also needed to make the trailer park a complete community.

Operation—Taxes

As to operation and taxes, some cities may prefer to manage trailer parks directly, obtaining a net income to be used for other municipal expenditures. Others may prefer to lease municipally owned camps to private operators, thus retaining ultimate control and realizing an income, but placing details of management in the hands of an operator with some trailer park experience. Still others will merely tax privately owned camps by means of the property tax and special license fees.

Present methods of taxation of house trailers vary considerably in different states. In general, they are subject to all regulations and taxes applying to commercial trailers for trucking purposes. License fees vary from a nominal charge to $50 or more, depending, in some states, on weight. In Florida the license fee is a flat $12 for all trailers. Visiting trailers from other states must obtain a Florida license only if they carry children of school age. In that case license fees aid in the support of schools. In about half the states, trailers are also subject to taxes based on assessed value, similar to personal property taxes. Obviously, changes in living habits occasioned by the trailer, just as changes in transportation methods brought about by trucks, call for new methods of taxation, methods fair to trailer owners and to various governmental units. More uniformity between states, together with provisions for reciprocity, is apparently needed.

Meeting the Problem Intelligently

As cities inevitably come to face some of these trailer problems, some will merely deplore the loss of taxes and local citizen interest which they feel a mobile population will bring. Others may fight trailers, ban them from parking within city limits, and tax them heavily. Some cities, however, will not let changes brought about by trailers catch them unawares. Instead of decreased taxes, shifting citizenship, and even more inharmoniously developed cities than at present, they will intelligently regulate and control the trailer to make it a new but integral part of the city pattern. Perhaps the necessity of adjusting to the dislocation of municipal revenue occasioned by the trailer will bring about in some cities a general revision of a faulty tax system. Perhaps second-hand prefabricated houses on wheels will provide cheap shelter for rehousing some smaller-sized slum families; although, if the building industry were properly organized, it could provide cheaper prefabricated houses without wheels under them than with wheels. Perhaps mobile housing will aid in speeding-up decentralizing trends in industry by giving labor more freedom of movement and by changes in markets brought about by shifts in population. If such is the case, it will offer an opportunity for much needed replanning and reorganization of the urban pattern.

Has Your City Encountered the Trailer Problem?

If so, the way in which the problem is being met may be interesting to other cities where it is imminent. Write to THE AMERICAN CITY about it.

Installing a Sewer Outfall on a Soft Foundation

By DOUGLAS L. McLEAN
Assistant Chief Engineer, Greater Winnipeg Sanitary District

IN order to provide a system of sewage collection, treatment, and disposal works at Winnipeg, Canada, the Greater Winnipeg Sanitary Board was organized over a year ago and prepared a program entailing the expenditure of about four million dollars. Approximately two million of this was for a sewer system, including laterals, a main interceptor, and an outfall from the disposal plant. Since the city of Winnipeg is located on a thick layer of heavy clay, all of the main interceptor was installed by tunneling, with the grade line about 40 feet below the surface.

The preliminary plan for the disposal outfall required the construction of a monolithic concrete box down to the unstable portion near the river bank and extended to the center of the river on piles. When the first excavation was made, unstable river silt was encountered, and further borings then showed that the silt deposit was very deep and it would be difficult to get good support for monolithic construction even on piles.

After a thorough exploration had been made of the river bank and the adjacent area, a new design was made. Because of the high tenders and hazards involved, this design was therefore abandoned and consideration was given to some material which would meet the requirements of flexibility, strength, and durability for a direct outfall through the unstable banks of the river to the surface of the river bed. It was decided to use Armco Multi Plate. This is a recent adaptation of corrugated pipe to large-diameter structures in heavy gages. The corrugation of standard pipe is 2 2/3-inch pitch, ½-inch depth, while Multi Plate has a 6-inch pitch and 1½-inch depth corrugation.

In the Winnipeg area pockets of heavy alkaline reaction have proved detrimental to metal structures. Pipe lines of ordinary steel laid during twenty years had shown such a short life that this material had been unfavorably considered for underground use in this area. An investigation was made of the service life of pure iron in locations of alkaline concentration similar to that encountered here. These studies convinced the Engineering Board that pure iron should be selected for the outfall, the estimated life of 5-gage pure iron being considered ample against the possible corrosive action of the soil on the outside of the pipe and that of the effluent within.

A further consideration was the possibility of free chlorine gas in the outfall, which might result should the health authorities require heavy chlorination of the sewage. As an additional safeguard, therefore, it was specified that the plates should be fully coated with a special asphaltic material.

Because of the durability requirement, steel bolts were not considered, and a special cast iron bolt, called "Z-metal," was specified. This material is heat-treated to increase its tensile strength over 50,000 pounds, and the tests conducted indicated a considerable durability differential over steel.

The final contract called for 495 feet of Multi Plate 7 feet 6 inches in diameter, down through the unstable portion of the river bank, with a short length of concrete diffuser at the end, supported on piles, with a flared outlet. The lowest tender for this type of outfall and the diffuser outlet was $32,625, representing a saving of more than $50,000 in comparison with the original plan of tunneling and coming up under the river bed.

One of the important requirements of this job was that the outfall be completed before the break-up of the river and high water. Installation therefore had to take place during April. The first of three carloads of plates arrived when the temperature was about 10 below zero. Three 5-

SHIPPING, ERECTING AND COMPLETING A 90-INCH CORRUGATED METAL SEWER OUTFALL AT WINNIPEG

foot length plates and three 10-foot were used at the end in order to provide staggered circumferential joints, all the rest of the plates through the line of pipe being 10 feet long. Owing to the thickness of the asphalt coating, it was at first a bit difficult to get the plates to match up. However, with the cooperation of the engineer for The Canada Ingot Iron Co., who had had considerable experience in Multi Plate erection, this difficulty was easily overcome. By leaving the bolts loose until a considerable section of pipe was erected, it was found that the plates could be matched more easily. At first the thick coating was scraped off the edge of the plates, which left a bare strip to be field-coated later. A better practice was then adopted of softening the coating along the bolt holes, permitting it to run down toward the center of the plate. This left a thin coating along the bolt holes, which made it easier to match the plates together. Because of the lap joints, there was an opening at each point where three plates came together. Each of these holes was calked with jute before final tightening of the bolts, and then coated with the same asphalt.

A very warm spell occurred during construction, and a sudden rise to flood condition in the river was expected at any time. Backfilling therefore followed from the lower end as fast as erection permitted. The backfill material was tamped up to the springline of the pipe.

A final inspection was made under what might be termed most unsatisfactory conditions. The river was up above the top of the pipe at the lower end. The end of the pipe was bulk-headed and no flow had been turned through the pipe. Under this condition there might have been a tendency for the pipe to float upward. Although a good, tight pipe was anticipated, it was not expected that a pipe of this construction would be absolutely water-tight. During this inspection it was found that there was a slight seepage into the pipe, but, considering the thousands of bolt holes and the hundreds of points at the three plate joints, it is surprising that the infiltration into the pipe was not a great deal more. The most of this seepage was at the end of the pipe where a joint was made with the concrete flared outlet.

The contractor was the Nelson River Construction Limited with H. M. Scott as Superintendent and G. B. Snow, Assistant Superintendent. The Canada Ingot Iron Co. Limited were the manufacturers of the Multi Plate pipe. The plates were coated with the special asphaltic material supplied on Armco paved invert sewers from the company's Guelph, Ontario, plant.

Value of City Planning to Assessment Administration

DILEMMAS faced by assessors under the present general system of poorly planned use of property make it impossible for them to do an accurate job of evaluation, Walter H. Blucher, Executive Director of the American Society of Planning Officials, told the National Association of Assessing Officers in convention on September 25 at Detroit.

The assessor meets debatable assessments in practically every direction, according to Mr. Blucher. In land overzoned for commercial purposes, land in blighted areas held for speculation, and in undeveloped real estate subdivisions, lie contributing causes for his troubles.

As an example of overzoning he cited the city of Warren, Ohio, which in 1920 had a population of 27,000, and in 1930 a population of 41,000. Although this represented an increase of over 65 per cent, the rate could scarcely justify the amount of commercial frontage the city has zoned, which would accommodate a population of 537,960. "How," asks Mr. Blucher, "can the assessor determine the value of the properties which have been zoned for commercial purposes but not yet used? Shall he say that since they are zoned for commercial purposes they should be assessed on that basis, or is he to use his intelligence and say that it is obvious the property will never be used for commercial purposes and therefore should be assessed on some other basis?"

Within blighted areas of a city, the problem is even worse, he says. Property is zoned for commercial or industrial purposes, or the owner considers that its potential use is for industrial purposes. When the Federal Government or any other agency wants to purchase the land for low-cost housing or slum clearance, the owners will not accept reasonable offers. "If we had acknowledged the fact that the property can never be used for anything but low-cost housing," says Mr. Blucher, "it would have been zoned and assessed as such."

In the case of real estate subdivisions, the assessor must decide whether land bought as farm property for a few hundred dollars an acre, then made into lots with a 20-foot frontage, to be sold for $75 a foot, should be evaluated for taxation as "raw land" or as business and residential property, the classification under which it is sold. If homes and business buildings are actually erected on these sites, the problem is not so great, comments Mr. Blucher, but if the land remained undeveloped because there is an over-supply of small lots (which is usually the case), and if it has been given a high evaluation, there will probably be tax delinquency.

These problems and many others which the assessor faces can be solved only by a carefully planned use of the land within a community, says Mr. Blucher. The purpose of planning, he points out, is to get a reasonable, rational and effective use of the land. This may mean that the planners of the future will not only have to provide better zoning than has existed in the past, but will also have to designate those areas in which low-cost housing, medium-cost housing and high-cost housing are to be constructed. When all the land in the community has been designated for its best and highest uses, the assessor will have little difficulty in determining the proper value for a parcel of property.

Lectures on Contemporary Housing and Rehousing

THE broader aspects of housing and the more specific aspects of architecture are being discussed in courses offered this fall and winter by the New School for Social Research, of New York. Charles Abrams, counsel to the New York City Housing Authority, has arranged a series of 12 lectures on "Contemporary Housing and Rehousing." Jan Ruhtenberg, formerly associated with Miës van der Rohe and with the School of Architecture at Columbia University, will discuss "Elements of Architecture for Artists, Draughtsmen and Clients."

Mr. Abrams has recruited eminent housing authorities to lecture on the aspects of the subject with which they are now associated: Langdon W. Post discussed on September 30 "The Social and Economic Backgrounds of the Housing Problems." Edith Elmer Wood will discuss on October 7 "The Social Aspects of Housing." Other lecturers on successive Wednesday evenings are: Gorge Gove, on "The Limited Dividend Corporation as a Solution"; Coleman Woodbury, on "Public Housing as a Solution"; B. Charney Vladeck, on "European Solutions"; Rexford G. Tugwell, on "Resettlement as a Solution"; Charles Abrams, on "Legal and Legislative Problems"; Ernest J. Bohn, on "Politics and Housing"; Frederick L. Ackerman, on "The Technical Problems"; Evans Clark, on "Financing Public Housing"; Joseph Milner, on "The Real Estate Problem in Housing"; Donald Slesinger, on "Management of Public Housing."

The Health and Comfort Aspects of Modern Public Vehicles

EFFICIENT, well-designed, physiologically correct public vehicles are something like cigarettes—they may not actually benefit the health, but poorly lighted, unventilated, mean-riding, overcrowded vehicles certainly add to the mental and physical burden of men and women and children.

Such vehicles are not necessary in this day, for great strides have been taken in vehicle design and construction in the last few years. Before discussing the public-health features of the vehicle today available for our cities, it might be well to explode the myth of the perilous carbon monoxide gas long believed to be a menace to bus travel and even to walking in streets where buses operate.

A comprehensive air-pollution survey made for the Department of Health of the city of New York by WPA has revealed that carbon monoxide gas is present in too low concentration to cause any physiological ill effects. Incidentally, carbon monoxide gas is odorless and tasteless. Now nobody denies that there are odors and possibly tastes in the gases emitted by gasoline motors, but they are probably due to vapors formed by incomplete combustion. Using standard M. S. A. apparatus, the highest count found for CO was 0.004 to 0.019 inside buses and 0.002 to 0.009 outside. To be at all dangerous, even after an hour's exposure, CO must have a concentration of 0.03 to 0.04 per cent.

Something over 30 cities in this country own systems of local transportation. But who would say that city transportation is not a major factor in municipal life? The power that city governments have over the transit systems is far greater than is usually exerted.

This potential power springs from the intimate and continuous contact of the public with the means of transportation. In fact, perhaps to a greater extent than is realized, the health of urban people may be affected by the facilities of transit—lowered where these facilities are in poor condition, raised where modern transit operates.

The Noise Factor

Consider the noise factor alone. In the larger cities, the roar and rattle and clang of trolleys and elevateds actually dominate certain sections and in many of these sections people sleep.

Increasing use of rubber has substantially reduced the noise factor even in trolley cars, and the trolley coach is probably the most quiet vehicle on the streets. In the modern bus, rubber insulation has set the motor off in a little world to itself. This little world is not only of soundproofing, but in all modern or metropolitan types it is completely outside the body occupied by passengers. White and A.C.F. Hall-Scott engines are "pancakes" placed under the floor. Yellow, Mack and Twin engines are stored in a separate compartment in the tail end of the bus.

This isolation of the engine prevents foul odors, keeps engine heat out of the body, reduces still closer to zero CO, the aldehyde odor, and the vapors due to incomplete combustion, permits better seating, and is more convenient for engine inspection and repair. This improvement has taken place in the last two or three years, since New York City restricted bus length to 33 feet. It was this restriction here and elsewhere that led to the development of the metropolitan or transit type of bus which uses the hood space for passengers. Thus the canniness of the bus operators has redounded to the better health and enjoyment of the bus patrons.

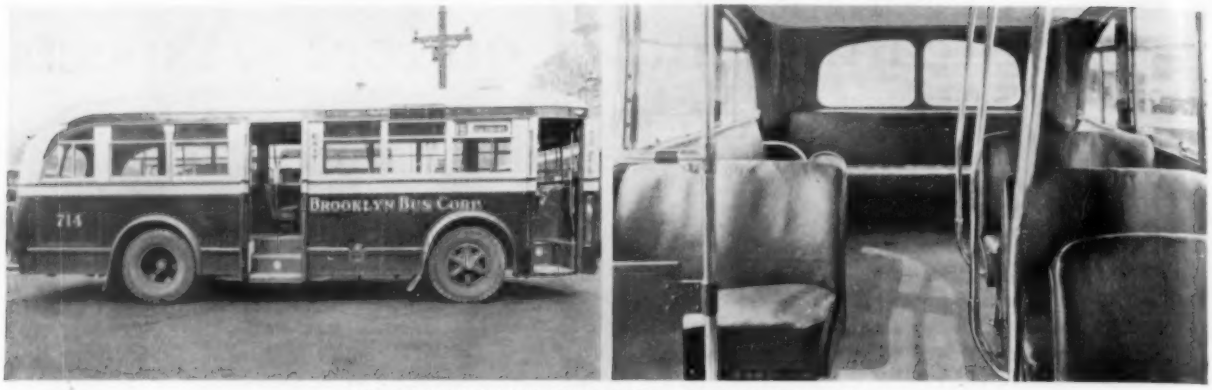
Ventilation

The factor of ventilation, for example, is an entirely new requirement. In the Brooklyn Bus Co.'s 30 new Brill buses, cold air is drawn in from the roof above the second window, between an inner and an outer sash, led by duct to the heater under the first seat, and emitted into the car by a front outlet under that seat, by a second outlet underneath the sandbox under the second cross seat, and by a third outlet under the cross seat immediately to the rear of the center door. Another method attains the same objective of clean, warm air in winter by feeding fresh air in at one point and recirculating it by means of a heater. This is a distinct advance in health maintenance. Heat was always a desirable quality in a public vehicle, but it was frequently accompanied by stuffiness. The modern idea is a steady supply of fresh air heated.

Toward Relaxation

With an approach to silent travel and with olfactory nerves and the lungs free from special burdens, what of the sense of touch, or feeling, creature comfort? Improved springing and large low-pressure tires, have vastly improved riding characteristics. Seats sympathetically designed for the human frame, and upholstered in the new latex-backed mohair or in leather, compound the comfort of easier riding. Unfortunately for passengers, if not for the company, not everybody always gets a seat. Over in Brooklyn it is being demonstrated not only that standing can be made more bearable but that sitting can be rendered comfortable even where there are numerous standees. In the newest buses, chromium-plated stanchions have been placed at the aisle edge of each seat-back. These stanchions, extending from floor to roof and thus providing firm hand and arm holds for man and boy, young and old, curve toward the aisle and thus keep the standee from inconveniencing the outside sitters on the cross seats. The stanchions also provide a proper means of support for walking through the vehicle. It is to be hoped that this innovation meets with both official and public approval. It merits mention.

In the matter of easier riding, it is important to take the driver into account. The modern idea is to make the driver's job easy, to eliminate fatigue, make *him* comfortable, more alert to his job, safer. He works nine hours,



ONE OF THIRTY NEW BRILL BUSES IN BROOKLYN, N. Y.
Note the stanchions in the interior view at right; explained in article

and in New York traffic makes about 11 miles per hour. In Brooklyn, a factor that takes most of the cashier's job away from the driver is the turnstile which, away from his jurisdiction, permits incoming passengers with nickels to pass directly into the car.

Lighting Has Become Scientific

What of sight? The Transit Commission requires 3 footcandles of intensity at 3½ feet from the floor of the bus. In a recent instance it was found that 15 footcandles were being furnished, the same as will be provided in the coming new street car where twenty 1.6-ampere bulbs are used in series on the 600-volt circuit, providing 15 footcandles on a 45-degree plane 33 inches above the floor. Skillful means are now taken to remove glare, which is as objectionable as low intensity. In these buses, glassless luminaires known as Brill-light are used for the first time.

The features of modern vehicles, then, are not merely to please the eye, to be pretty, but to please the person. The old bus of 1925 was a dependable vehicle, but it could not be compared with the vehicles of today in the matter of comfort. Present objectives are safety, comfort, economy, and the by-product is better health—or at least less strain on the human economy.

Public Liability for Motor Accidents

THE publicly-owned motor vehicle has induced general appreciation of the fact that the injuries that a negligently managed automobile can inflict are no different and should not be subject to different rules because the driver is employed by the community rather than by a private employer. This likeness has made it seem inappropriate to many states to exempt the community employer from a liability to which an identical private employer would be exposed; and it has also made manifest the artificiality of the traditional distinction between the corporate and the governmental function. In fact, states have been perhaps more ready than cities to open themselves to liability for motor-vehicle negligence, and inasmuch as the distinction was never applicable to states, the abandonment of sovereign immunity by states has accentuated the impropriety of maintaining the distinction in cities. Legislation and judicial construction, nevertheless, display evidence of the ancient barriers which the modern rules have had to hurdle.

Provisions for governmental insurance, defence or indemnification of public officers and employees driving motor vehicles appear to be becoming more common. Minnesota has several statutes providing for such indirect assumption of liability by cities, villages and boroughs in the case of police and fire departments, by county boards in the case of all officers and employees, and so far as concerns insurance, by towns, school districts, cities, villages and boroughs in the case of all employees. New Hampshire permits insurance of "any or all state-owned motor vehicles." These statutes indicate a tendency, by no means universal, however, to admit community responsibility for negligently operated community motor vehicles, with or without limit, or to discharge the obligation by indemnifying and defending the officer or insuring the liability. There is no reason why every state and large city should not assume at least this responsibility.

In principle, the furnishing of public education has been regarded as governmental, so as to relieve the city or state of liability in tort. Exceptions have been engrafted upon the immunity, on occasion, as in the case of nuisance in the operation of school buildings or where, as in New York, a local board of education is assigned corporate character for the purpose. Some states, as, for example, California, by statute held counties, cities and school districts liable for negligently permitting dangerous or defective conditions of public property to arise.

Numerous states have asked their attorneys general for an opinion as to whether the school district or board of education might take out insurance for the benefit of children or others injured in school-bus accidents. The answer almost uniformly has been in the negative, on the traditional ground that as there was no such public liability at common law and none has been provided by statute, it would be improper to spend public funds to insure against a non-existent liability. Only the Attorney-General of Arkansas seems to have taken the position that such premiums might be paid "because it would be in effect for general school purposes." Inasmuch as the customary negative opinion led in Wyoming to the passage of a permissive statute, it may be that other states may feel persuaded to follow this worthy example.

In connection with municipal liability for motor accidents, liability for the safe condition of streets and highways should be considered. Statutes are occasionally passed either to *deny* a liability imposed or intimated by the courts, or to foreclose any such possibility. On the other hand, a more liberal tendency is discernible in some states, particularly those of the Middle West. The liability varies greatly in these statutes, but they are generally loosely drawn and susceptible of a very broad construction, enabling the courts to escape what they felt the injustice of the rule of immunity for "governmental" activities.

—From a paper by EDWIN M. BORCHARD on "Municipal Tort Liability," delivered at a meeting of the Section of Municipal Law of the American Bar Association, August 25 and 26, 1936; published in full in *Legal Notes on Local Government*, September, 1936.

Municipal Plants and the Farms

Don't Miss This Opportunity to Get Together with the Farmer

One of the large utility holding companies recently advertised that "farmers and other rural residents need not even hope for any benefits when their nearest city decides to build its own electric plant."

The advertisement then quotes the New York Legislative Committee investigating public utilities as remarking that the tendency of municipal plants is to favor city consumers. As a matter of fact, this is hardly remarkable. After all, a municipal plant ***is a municipal*** *plant; usually it must pay its way and not infrequently a portion of the town taxes as well. It will hesitate to gamble on future loads. But there is another side to the picture.*

At the request of this magazine, the Rural Electrification Administration has furnished not only the accompanying list of municipalities and municipal plants that are participating in the REA program, but also this article.

MUNICIPAL electric plants should extend their lines into the country in order to strengthen the bond between the town and the whole market area. Electricity will do as much as good roads or telephones towards bringing the country folk into closer harmony and feeling with the town people. Such a united feeling will build popular support in the surrounding country which can be of considerable help in times of crucial problems. In many elections, whether national, state, or local, the support of the farm group has been of considerable help to the interests of many of those in the municipalities. Furthermore, there is much mutual strength to be gathered from joint action in time of any court difficulties. Any one familiar with municipal government certainly is aware of the value of having public sentiment behind him even though the farmers may not directly vote in the municipal elections.

A united interest between town and country is just as important in the economic field as it is for its political aspects. The farm group surrounding any municipality offers a great and profitable trade area, and an opportunity of widening this territory should not be overlooked. Two or three hundred miles of rural lines will do much to broaden the existing trade areas of many small and medium-sized towns.

An increased farm load would also be of considerable value towards more economical operation of a municipal plant. The farm load is desirable for the municipal plant as a supplement to the city load, as the greater consumption during the day for farm equipment, such as milk machines or auxiliary motors and pumps, will mean a wider peak for the entire municipal system. This, in turn, means better utilization of the equipment and lower operating cost.

Many municipalities are anxious to extend their lines, but are prohibited for several reasons. The city charter or the state law does not permit the municipal utility to extend its lines outside its corporate limit. Some municipal plants unwilling to pledge their general credit for construction outside corporate limits have not extended into rural areas because of the inability to issue revenue bonds to provide the necessary funds for this purpose, and others have been restricted because of the lack of excess plant capacity. Others which make the local power plant carry the load of taxation are unwilling to lower their rates to rural customers.

Encourage Cooperatives

The municipal utility, which in itself cannot extend its lines into rural areas because of legal or financial inadequacies, can still cooperate in rural electrification by helping the farmers to help themselves. That is, the municipality can lend its support by encouraging the formation of a farm cooperative which will undertake to build the line. Many groups are anxious to form cooperatives, but are hesitant in getting under way, because some of the members are not familiar with the electric utility business and want to make sure of each step taken. The groups in this stage need much counsel and encouragement which the municipality can give them.

The municipality can and should also cooperate by offering a wholesale rate essentially at cost to this group. The success of any cooperative depends upon its ability to encourage large and economical consumption of electricity on the farms. A reasonable wholesale rate is extremely important if this is to be accomplished.

In some localities the farmers have preferred to organize power districts which will buy the current from municipal plants. Both the power district and the farm cooperative will do much toward the furtherance of rural electrification.

Rural electrification offers an additional means by which the municipalities can be brought closer together, and it should strengthen the usefulness of the various state leagues of municipalities considerably. The League of Iowa Municipalities has grasped this idea early, as indicated by the recommendations of its Committee on Rural Electrification, which are:

"1. That we endorse and lend our assistance to rural electrification.

"2. That the municipal-owned electric plants work in conjunction with the Rural Electrification Administration in furthering such extensions.

"3. That the Rural Electrification Administration be requested to designate one of their representatives acquainted with Iowa rural conditions to call on the municipal plants of Iowa for the purpose of furthering such work.

"4. That the most favorable electric rate permitted by local operating conditions and costs be given by the municipal plants of Iowa for the extension of rural electrification.

"5. While it appears that this meeting favors wholesaling of electric energy to farm-owned cooperatives for rural extension work, we further recommend that municipal plants retail electric energy to rural customers, where conditions render it advisable."

These recommendations were unanimously adopted.

By quite thorough participation with the state groups,

"Just 30 minutes
AND MY LUNCHEON'S ALL ARRANGED"
"I telephoned four girls, two stores and the florist in about thirty minutes. There's my luncheon arranged and off my mind."
The telephone puts the world at your finger-tips. It is a quick, dependable messenger in time of need—a willing helper in scores of household duties.
In office and home, these oft-repeated words reveal its value —"I don't know what I'd do without the telephone."
A telephone extension upstairs, beside the bed, is a great convenience at small cost. Saves steps and time—insures privacy.
BELL TELEPHONE SYSTEM

many municipalities have found that mutual advantages can be favored by cooperating with a national association of municipal plant managers launched at Kansas City November 8 and 9, 1935, which will facilitate the exchange and development of ideas in order that the individual municipal utility may be operated with greater efficiency.

Municipalities can receive these advantages of rural electrification independently through their own efforts, or by cooperating with the Rural Electrification Administration. This Administration is prepared to lend money, either directly to the municipality, to the power district, or to farm cooperatives which apply for loans.

Two methods have been pointed out, direct and indirect, by which municipalities may further the cause of rural electrification. The direct method requires that the city handle the financing and operation of the lines. An example of this may be obtained from the history of the Sioux County, Iowa, project.

Hawarden's mayor became interested in rural electrification, as his city has its own generating and distributing systems and plenty of surplus power for rural consumption. The City Clerk wrote REA for details, and his letter indicated that a preliminary canvass had been made showing the possibility of fifty miles of rural extensions. After one month's promotion, the sponsors of the project enthusiastically reported that there was a probability of including between 80 and 90 miles. The final allotment was made for $127,500 to build 150 miles of rural lines. The city will contract with REA for the loan, construct the lines, generate and supply the energy; and will itself operate, maintain and repair the rural line.

The Chief Engineer of the public utilities at Bellefontaine, Ohio, discussed the possibilities of rural extensions with some of the farm leaders in Logan County, and before long a cooperative was organized, and under the engineer's direction a project was launched. Bellefontaine's municipal plant will dispose of surplus energy through a rural distribution system of 215 miles, serving 860 consumers. For the construction of these lines, REA has allotted to the Logan County Cooperative Power and Light Association, Inc., the sum of $225,000. The cooperative itself will take care of the maintenance and operation of the new lines.

PARTICIPATION OF MUNICIPAL PLANTS IN RURAL ELECTRIFICATION ADMINISTRATION PROGRAM

Municipal plants in these towns sell current wholesale to cooperatives or they have borrowed (*) to extend existing system

State	County	Municipality	Amount of Loan
Alabama	Loe	Opelika	$ 72,000
Georgia	Wilkes	Washington	12,000
*Illinois	St. Clair	Mascoutah	42,000
*Indiana	Wells	Bluffton	17,100
*Iowa	Sioux	Hawarden	127,500
*Iowa	Webster	Gowrie	26,000
*Iowa	Bremer	Sumner	79,300
Iowa	Scott	Muscatine	260,000
Iowa	Wright	Renwick	45,000
Iowa	Adams	Corning	120,000
Minnesota	Meeker	Litchfield	450,000
Minnesota	Faribault	Wells	23,000
Minnesota	McLeod	Hutchinson	650,000
Nebraska	Scotts Bluff	Gering	65,000
North Carolina	Wilson	Wilson	161,000
Ohio	Miami	Piqua	254,000
Ohio	Shelby	Piqua	350,000
Ohio	Champaign	Piqua	595,000
Ohio	Logan	Bellefontaine	225,000
*Tennessee	Rhea	Dayton	38,058
*Texas	Bell	Bartlett	33,000
Washington	Mason	Tacoma	57,400

* Will extend own lines.

Frozen Water Services and Meters in Indiana

Reports of the Effects of the Winter of 1935-36 in 29 Cities

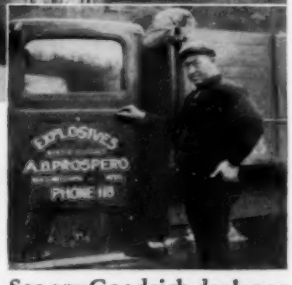
Place	Frozen Meters: Pits	Frozen Meters: Basement	Meters: Total	Meters: %	Frozen Services: Number	Frozen Services: %	Normal Cover: Mains	Normal Cover: Services	Inspection Of Service Covers	Means Of Protecting Meters	Frost Penetration: Sandy Soil	Frost Penetration: Clay Soil	Pumpage Increase On Account Of Water Waste	Was Service Interrupted	Any Taste Or Odor—Remedy	Frozen Mains	Frozen Hydrants	Plant Freeze Account Of Pressure
Bedford	50	240	290	7.5	879	23	30"	28"	No	No	-	36"	0.M.G. for Feb	No	No	3	38	7
Bloomington	300	100	400	9	600	13	36"	30"	Yes	Set In Meter Pit	-	42"	0.5 M.G.D	No	Yes - Carbon	2	10	1
Columbus	-	-	75	12	275	9.17	48"&72"	18"&48"	-	-	-	48"	100%	Almost	Yes - Carbon	3	-	175 Serv. Brks
Crawfordsville	177	138	315	12.1	276	8.7	42"	36"	Main To P.L.	Set In Meter Pit	-	48"	50%	No	Yes	0	7	0
Danville	50	10	60	9+	230	35+	-	-	-	-	40"	48"	100%	No	No	Few	0	0
Elkhart	15	30	45	.0055	400	4.9	60"	54"&48"	Neglected	Meter Mittens & Cover	60"	-	100%	No	Yes-Flushing	11	5	50
Evansville	1054	181	1135	4.9	684	2.7	36"&48"	36"&48"	Yes	No	36"	36"	132.56 M.G.	No	No	2281 of 2"	None	None
Ft. Wayne	-	-	1244	4.4	2500	8.8	48"&54"	-	Main To P.L.	No.	54"	48"	4.82 MGD For Feb	No	Yes-Carbon	31	100	31
Galveston	4	2	46	26	50	35½	40"	30"	No	No	-	36"	3 Times Normal	No	No	None	None	None
Gary	Meter In Pit	1100	1100	7.76	315	2.11	66"	48"To P.L. 48"To Bldgs.	No	Suggest Box & Sawdust	54"	60"	1000 GPM	No	No	None	None	None
Goshen	6	225	231	7.5	325	10.5	54"	60"	No	Electric Heater	54"	60"	7%	No	No	1	6	None
Indianapolis	1446	3653	5099	7.0	2000	2.75	50"	54"	Yes	No	50"	48"	15% to 20%	No	Slight Ammonia Carbon	24	6	19
Jasonville	26	0	26	14	26	14	36"	30"	Yes - 90"	No	-	30"	25%	No	No	1	0	3
Kendallville	20	70	90	5	35	2	60"	36"&48"	Yes	Pack	48"	48"	-	No	No	0	2	0
La Porte	8	25	33	2.75	110	3	60"	54"	No	No	-	54"	25%	No	Yes-Chlorine	5	0	5
Ligonier	22	4	26	3	25	3	54"	48"	No	No	60"	54"	70%	No	No	2	3	1
Marion	713	25	738	12.3	75	1.2	60"	40"	Yes	Use Pits	40"	30"	No	No	No	1	4	0
Michigan City	41	186	227	4.3	317	9.7	54"	42"&48"	No	No	69"	-	3½ Times Normal	No	No	3	12	3-92 Serv.
Newburgh	22	0	22	7	35	2.0	22"	18"&20"	No	Use Pits	30"	30"	25%	No	No	4	1	27
Noblesville	125	25	150	12.5	327	2.5	44"&54"	36"&48"	Yes	-	48"	-	50%	No	No	9	15	5
Osgood	67	0	67	31.1	67	3.3	20"	20"	Yes	-	37"	28"	1,000 to 2,000 GPD	Yes - Main Break	No - Used Carbon	3	3	6
Richmond	66	246	312	-	55	0.6	54"	48"	Yes	Boxes Recommended	-	45"	500,000 GPD	No	No	1	0	1
Rochester	55	21	76	6.5	62	6	54"	48"	No	No	52"	50"	7%	No	No	5	2	5
Rockport	0	0	0	0	10	1.5	36"	36"	Yes	Use Pits	32"	30"	Yes	No	No	1	0	0
Scottsburg	2	0	2	1.5	1	.002	36"&42"	-	Yes	Use Pits	-	24"	20%	Yes Main Break	No	2	0	2
Terre Haute	1210	210	1420	11.4	30	0.2	48"&36"	48"&36"	No	Lantern at Meter	60"	-	20%	No	Yes-Carbon	3	1	1
Union City	122	12	134	10	280	17	48"	30"	Post 6 yrs	No	54"	48"	25%	No	No	3	3 Branches	4
Valparaiso	0	100	100	5	150	7.5	48"	48"	Yes	No	54"	48"	1.5 MGD Excess	No	No	8	15	30
Washington	170	20	190	10	280	10	54"	30"	No	Water Co. Specifies Location	30"	22"	40%	No	Slight Gasoline	0	0	8

Data by courtesy of J. A. Bruhn, Secretary, Indiana Section, A.W.W.A.

"I HAUL DYNAMITE"

—"YET I'M ALWAYS SAFE ON SILVERTOWNS,"

says **A. D. PROSPERO**



"I haul 3- to 6-ton loads of dynamite and black powder. We travel all kinds of roads in all kinds of weather, but I'm always safe on Silvertowns."

That's A. D. Prospero of Masontown, W. Va. speaking. His two trucks haul dangerous explosives used in mines, quarries and road-building. Night and day they thread their way over rocky, winding mountain roads. Down steep hills. Round hairpin curves. With a load capable of blowing an army to bits!

There's a real job for truck tires. One where they just can't have tire failures. Goodrich Triple Protected Silvertowns averaged 48,000 miles on the truck pictured here!

There's a good reason for this amazing performance. Goodrich Silvertowns are specially built to stand up on the world's toughest hauling jobs. They are Triple Protected in the sidewall—fortified right at the point where 80% of all premature failures occur. This extra protection means extra miles—freedom from dollar-stealing sidewall breaks.

Triple Protection Free

The tires that set mileage records on hazardous hauls in the West Virginia mountains will do a better job on your trucks, too. You pay no premium for Silvertowns. Triple Protection makes tires more expensive to build but it costs you nothing extra.

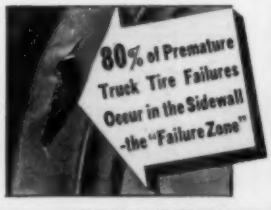
See any Goodrich dealer or write The B. F. Goodrich Company, Akron, Ohio.

HOW TRIPLE PROTECTION WORKS

1 PLYFLEX—distributes stresses throughout the tire—prevents ply separation—checks local weakness.

2 PLY-LOCK—protects the tire from breaks caused by short plies tearing loose above the bead.

3 100% FULL-FLOATING CORD—eliminates cross cords from *all* plies—reduces heat in the tire 12%.



Goodrich *Triple Protected* Silvertowns

SPECIFY THESE NEW SILVERTOWN TIRES FOR TRUCKS AND BUSES

Recent Trends in Joint Action Among Local Governments

AN analysis of some of the recent legislation authorizing cooperative action among governmental units, and some illustrations of instances where such cooperation has been accomplished, are presented in the 1936 edition of "The Municipal Year Book," by Norman N. Gill, Research Assistant, Department of Political Science, University of Chicago. Many of these items were reported by city officials. In the belief that all of them will interest readers of THE AMERICAN CITY, Mr. Gill's analysis is here reprinted by permission of the publishers, the International City Managers' Association:

Finance and Personnel

"One of the most unique arrangements for cooperation in the field of financial administration is to be found in the Los Angeles metropolitan area were 35 incorporated municipalities have abandoned local assessment for taxation and have delegated that function, by contract, to the county tax assessor's office. Cooperation in the field of purchasing is found in the Cincinnati area where the purchasing agents of the city, county, school board, university, and public library have formed the coordinated purchasing committee of Hamilton County, an extra-legal administrative group set up by joint agreement. This joint arrangement has led to standardizing specifications for major commodities, the reduction of bid forms and price inquiry to a single standard for all units, establishment of uniform legal information in contract bid forms and adoption of uniform contracting dates. There are other instances of cooperative purchasing, as in the village of Winnetka, Ill., which buys coal for the school district; and the school districts of Muskegon, Mich., which have entered into an agreement for the joint purchase of supplies and services. The state leagues of municipalities in Michigan, New York, Wisconsin, and Virginia have established purchasing information exchange services and in some instances actually do some buying for the municipalities. In Michigan 90 municipalities are now buying their fire hose through the League.

"City councils in California are authorized to contract with other municipalities or counties or with any state department for the conduct of examinations or for the performance of any other service in the field of public personnel administration. The Civil Service Commission in Jefferson County, Ala., acts as the personnel agency for Birmingham and Bessemer, serving a total population of 740,000 people. Personnel training is also done on a cooperative basis, i.e., the fire schools in many large cities are open without charge to firemen in neighboring communities. An illustration is the establishment in 1935 of a training school in Louisville, which is in continuous operation, and to which all firemen in the state are welcome.

Fire Protection

"Ohio in 1935 provided that any county or township may enter into a contract with any city, county, village, or township for the use of its fire department and apparatus, upon mutually agreeable terms, and on the basis of a stipulated price for each call or run. Similar legislation has been enacted in recent years in California, Pennsylvania, Minnesota, New York, and Wisconsin. There are numerous instances in various parts of the country where farmers have banded together, purchased apparatus, and contracted with an organized town fire company to serve members of the farm association. There are also many instances of fire apparatus owned jointly by city and county.

"A comparatively recent development is that of mutual aid between cities which have organized fire departments.* Probably the first and largest of these arrangements is the Egyptian Fire Fighters' Association, organized in Illinois in 1925, including 60 communities and comprising 12,000 square miles, located in the southern portion of the state. In 1933 a similar arrangement was made by a group of cities centering around Lowell, Mass. The following year such a scheme was worked out for eight villages located in Westchester County, N. Y. Recently a group of nine communities in Kenton and Campbell Counties, Ky., within the Cincinnati metropolitan area, adopted a mutual aid plan. Of especial interest is a plan formulated early in 1936 by ten fire chiefs, representing as many communities located within Milwaukee County, to provide reciprocal aid in the fighting of fires, when the request is made by the fire chief of the community in need. This plan was designed to replace the previously existing system of contracts which provided for fees whenever apparatus was moved outside the limits of a community. The fire chiefs also agreed that on the outskirts of the city of Milwaukee, where boundary lines are irregular and many fire calls are made to the wrong department, the responding department will work until the proper department arrives.

"A recent survey by the Michigan Municipal League shows that 179, or 72 per cent, of 250 municipalities in the state render fire protection to outside areas, but only 47 of these cities provide such service on a contract basis. A great many other cities throughout the country have contractual arrangements with nearby smaller units for the provision of fire protection services, including Chicago, Cincinnati, Dallas, Kansas City, St. Paul, and Wichita.

Police Administration

"Intergovernmental cooperation in this field is quite prevalent in the use of police radio systems. According to the American Municipal Association, at least 54 cities of over 50,000 serve areas lying outside their legal boundaries. Some of the cities which serve the entire area of the county in which they are located are Chicago, Los Angeles, Cleveland, Indianapolis, Louisville, Toledo, Youngstown, Flint, Spokane, Fort Wayne, El Paso, Little Rock, Binghamton, Topeka, and Wichita. Chicago serves 51 suburban towns and villages; Knoxville, Tenn., 15 counties; Los Angeles, the county and 17 cities; Nassau County, N. Y., the entire county, 63 villages, 2 cities, and the state police in an adjoining county; Portland, Ore., the state police, county sheriff, and city of Vancouver, Wash.; Kansas City, Mo., three counties and two cities in Missouri, one county in Kansas, and the Missouri state highway patrol; and Buffalo, N. Y., 13 cities, towns, and villages in the county, county sheriff, state police, United States Secret Service, Society for Prevention of Cruelty to Animals, suburban cars of a local newspaper, cars of a railroad entering the city.

* See THE AMERICAN CITY, August, 1936, pp. 53-55.

A quarter of a century of continuous service is an exacting test for any road. Yet such records are not unusual with Tarvia. Many highway officials can tell you of long-lived Tarvia roads like South McNeill Street, Memphis, which was Tarvia-built in 1911. Experience has shown that Tarvia roads are easy and inexpensive to build and require only the most economical maintenance to keep them smooth, easy-riding and skid-safe. The Tarvia field man is at your service. Phone, wire or write our nearest office.

THE TECHNICAL SERVICE BUREAU of The Barrett Company invites your consultation with its technically trained staff, without cost or obligation. Address The Technical Service Bureau, The Barrett Company, 40 Rector Street, New York.

South McNeill Street, Memphis, Tennessee. Tarvia-built in 1911, the year of the first transcontinental aeroplane flight—flying time, 84 hours, 2 minutes!

THE BARRETT COMPANY New York Chicago Philadelphia Birmingham Boston St. Louis Cleveland Minneapolis Lebanon Milwaukee Detroit Baltimore Columbus Youngstown Toledo Buffalo Providence Syracuse Hartford Cincinnati Bethlehem Rochester Portland, Me. Norwood, N. Y. In Canada: THE BARRETT COMPANY, LTD. Montreal Toronto Winnipeg Vancouver

and the local fire department. A year ago the Davenport, Iowa, station became coordinated with the cities of Rock Island, Moline, and East Moline, Ill., sheriff of Scott County, and the United States arsenal at Rock Island. The city of Omaha and Douglas County, Nebr., have jointly built a police radio transmitter. The city of Augusta, and the counties of Aiken and Richmond, Ga., jointly support a police radio system. Sacramento County, Calif., pays a fixed sum each month toward the operation of the new radio station in the city of Sacramento, in return for service to county cars. Lincoln, Nebr., broadcasts for York, Grand Island, Hastings, and Minden. A corollary development is the use of police radio by fire departments in at least 30 cities of over 100,000 population.

"In North Carolina, Minnesota, and New Jersey legislation has been passed authorizing state-wide police radio systems and interconnecting arrangements for joint use of facilities by all communities within these states.

Public Welfare

"Certain welfare activities are conducted jointly with other governmental units in 20 communities between 30,000 and 100,000 population; and in an equal number below 30,000. Perhaps the most interesting illustrations are to be found in Atlanta, Ga.; Binghamton, N. Y.; Charlotte, N. C.; Glendale, Bakersfield, Los Angeles, and Pasadena, Calif.; Hamilton and Zanesville, Ohio; Boise, Idaho; Fort Thomas, Ky.; and El Paso and Lubbock, Texas. In Wyoming two or more counties may plan joint programs and establish district agencies.

"Legislative authorization for the joint establishment and maintenance of county almshouses exists in Virginia (in effect in over 33 counties), Illinois, Minnesota, North Carolina, Pennsylvania, Michigan, South Dakota, Oregon, and other states. In New Jersey and Arizona, counties are authorized to contract with each other for the care of the indigent poor. In Wisconsin any two or more counties may jointly provide for a poorhouse, an asylum for the chronic insane, tuberculosis hospital, house of correction, or workhouse. North Carolina provides that cities and counties may consolidate their charities under the supervision of the county board of charities and public welfare. A county and a city of the first class in Virginia may unite in providing for a local superintendent of public welfare. In Minnesota the city of St. Paul and Ramsey County jointly operate the city hospital, county home, and city-county department of outdoor relief. In Ohio and Kentucky, counties may unite in the erection and maintenance of workhouses for their joint use. Contiguous counties in Indiana may combine for the establishment of orphan asylums.

Public Health

"In Michigan, Texas, Ohio, and Minnesota legislation has been passed authorizing adjacent counties to establish joint tuberculosis sanatoria. Inter-county health districts are authorized in Michigan and Mississippi. Establishment and maintenance of joint county hospitals is authorized in Michigan, Minnesota, and Texas. County health departments in Tennessee may serve as the department of health for municipalities within the county. Pennsylvania legislation provides that any city, borough, or township may cooperate with the county in the administration and enforcement of the health laws of the state. In California cities and counties may enter into an agreement by which the county health department may perform any or all functions relating to public health in the city; and county health officers, upon consent of the city council, can enforce within the city limits all orders of the state board of health and statutes relating to public health. Thirty-six incorporated municipalities in Los Angeles County have discontinued local health administration in favor of centralized control through the county health department. This is accomplished through contract.

"In New Mexico the state is divided into 10 districts for the purpose of public health supervision, instead of the 31 counties; and the counties pay a portion of the health district expenses. In New York, where for more than a decade the state has offered to pay half the costs of county health units, cities are encouraged to abolish their health departments in order to take advantage of county services by the reduction from five to three in number of required years for which such service must be maintained. In South Carolina the State Board of Health is authorized to establish full-time local or district health departments for any group of cities or counties where the local governing powers desire the formation of such a department and are willing to assist financially to an amount at least equal to the state aid. In Indiana two or more counties may combine to establish a health district for the employment of a full-time health officer. Inter-city health service arrangements exist in Birmingham, Ala., and El Paso, Texas; in 15 cities between 30,000 and 100,000 population; and in an equal number of cities below 30,000. In 1933 in El Paso County, Texas, the city and county health units were amalgamated into a city-county unit. Other institutions maintained on a city-county basis in this county are a general hospital, isolation hospital, poor farm, general clinic, Pasteur institute, social service department and venereal disease clinic. In Dallas County, Texas, a hospital system and an industrial home for dependent boys are financed jointly by the city and county. Harris County and the city of Houston have for a number of years maintained a joint hospital system. Tarrant County and the city of Fort Worth have agreed on the joint financing of a tubercular sanatorium and a hospital.

"A good example of the combination of counties is to be found in the state of Michigan, in which there are several districts, each composed of two or more counties. There are also in Michigan county health units supported locally by the state. Tennessee has five health districts, each composed of two counties; Georgia has one of three counties; North Carolina has one of two counties; Virginia has three health districts, each composed of two counties; and Massachusetts has two districts within which cities and towns provide joint health services. There are 68 general hospitals in the United States owned and controlled jointly by one or more cities and one or more counties.

Recreation

"Interesting examples of cooperative action in the field of recreation between cities and school districts exist in Los Angeles, Detroit, Dallas, Fort Worth, Cincinnati, Pittsburgh, Bridgeport, and Milwaukee. In Colorado, municipalities and school districts may cooperate in the performance of public recreational services. Inter-city recreational programs are now being conducted in several cities under 100,000 population. There are several cities on the Pacific coast in which a coordinating recreation commission has been established with the approval of the city and school authorities for the purpose of securing joint action in the development of the recreation program in several of these cities. The superintendent of recreation is paid partly from school and partly from city funds, and the two authorities likewise contribute jointly toward the financing of the recreation program. Among such cities are Long Beach, San Diego, and Oakland.

Libraries and Education

"The provision of library service by joint contractual agreements is widespread in several states. Inter-county libraries are authorized in Washington, Nebraska, Arkansas, and Texas; and the use by contract of an already existing library in a county, if one exists, is made mandatory in Iowa, Michigan, North Carolina, Alabama, and Minnesota. An outstanding example of library service rendered by contract with an existing library is the Library Association of Portland, Ore.,

VIBRATION
TRACTOR ENEMY NO. 1

It is a universal law that marching soldiers must break step while crossing a bridge — to avoid the destructive effects of VIBRATION. Unless *controlled*—vibration can be just as destructive in tractors.

CONTROL MAKES THE DIFFERENCE

CONTROL MEANS *longer life*

★ CONTROLLED *Instant* STARTING
CONTROLLED INJECTION OF FUEL
CONTROLLED AIR-FUEL RATIO
CONTROLLED IGNITION

14 TO 21 HOURS PER DAY. In the construction of a new two-lane highway on U. S. 30 across northern Indiana, the Controlled Ignition Oil Tractors of J. C. O'Connor work 14 to 21 hours a day. Above is one of the Model "L-O's" with 7-yard Continental Scraper. Below is a Model "K-O" leveling the grade.

It is only natural that Controlled Ignition, with its l compression pressures and freedom from destructi vibrations, should mean longer tractor life. A typi owner reported that after 7,000 hours of heavy work in severe dust, 22 hours a day — he had not even repla the original sleeves and pistons of his first Model "K-O In a large logging camp — under the most abusive type work — a fleet of Model "L-O's" worked 3,500 hou and still had their original pistons, sleeves, rings, valv steering clutches, master clutches, brake bands, main a connecting rod bearings.

Control makes the difference! Controlled Ignition enabl Allis-Chalmers Oil Tractors to burn any good grade low cost Diesel fuel oil . . . without excessive stress a strain on metals and working parts. There is no need f heavy, unbalanced construction, special high pressu bearings, high tension rings, heat reservoirs in the co bustion chamber or special lubricating oil. Investigate th IMPROVED method of burning low cost Diesel fu

ALLIS-CHALMERS
TRACTOR DIVISION—MILWAUKEE, U. S. A.

Controlled Ignition **OIL TRACTORS**

which serves Multnomah County. This is one of the largest unified library services in the country. A few counties in California are served in this manner, and two county libraries in this state give service to neighboring counties by the contract method. Interesting examples of contractual relations between a city library and a smaller suburban town are to be found in Davenport and Bettendorf, Iowa; Bay City and Essexville, Mich.; and Toledo and Sylvania, Ohio. Joint arrangements also exist between the cities of Detroit, Mich.; Cleveland and Columbus, Ohio; Milwaukee and Racine, Wis.; Fort Worth, Texas; and some of the municipalities in the counties within which these cities are located. There are some interesting illustrations of voluntary cooperation in book purchasing and other library functions by libraries belonging to different governmental units.[1]

"In Kansas a 1935 act sets up a procedure whereby two or more school districts may cooperate in the maintenance of schools. In New Mexico any school district which has failed to maintain and operate a school for five consecutive years may be consolidated with a municipal or independent school district by action of the county board of education. Legislation of similar character was enacted in 1935 in Kentucky, Michigan, and Montana. In Wisconsin, Michigan, Minnesota, California, New Jersey, North Dakota, Massachusetts, and North Carolina, two or more counties may jointly establish and maintain special agricultural, normal, and high schools.

Public Works

"Water-supply systems on a cooperative basis are quite common among governmental units. The sale of water by central cities to suburbs exists in New York, Chicago, Cleveland, Baltimore, Cincinnati, and Portland, Ore. Chicago sells water to 33 suburbs; Detroit to over 20 municipalities and townships. Baltimore has such an arrangement with Anne Arundel County and the town of Eldridge in Howard County. There is interstate cooperation between the water-works plants of Kansas City, Mo., and Kansas City, Kans. Similar arrangements exist in Louisville, St. Paul, New Bedford, Trenton, Youngstown; in a dozen cities between 30,000 and 100,000 population; and in 15 cities below 30,000 population. Joint water-works systems are authorized in Illinois and Alabama, metropolitan water districts in Utah, and extension of water lines beyond their legal limits by cities in Oklahoma, Minnesota, and Texas.

"In Wisconsin and Pennsylvania, legislation has been passed permitting city authorities and county boards to make joint agreements for sewage disposal within their combined areas. In Oklahoma, Minnesota, and Texas cities are authorized to extend their sewer lines beyond the municipal limits. Twelve northern New Jersey counties recently arranged for a combined sewage-disposal system. Louisville and St. Louis furnish sewer service on a rental basis to several adjoining villages, as do Long Beach, Trenton, Youngstown, and also a dozen cities between 30,000 and 100,000 population, as well as an equal number below 30,000 population. Cleveland and Lakewood, Ohio, have a similar arrangement; and a number of instances are on record where cities cooperate in the construction and maintenance of sewers.

"California, Michigan, Kansas, Pennsylvania, South Dakota, and Oregon are among the states authorizing consolidation and cooperation of counties for road construction and maintenance. There are some instances of city-county cooperation in the maintenance of public buildings such as jails, courthouses, city halls. Such arrangements exist in Chicago and Cook County, and St. Paul and Ramsey County, Minn. In Iowa public halls may be built by and for the combined use of cities and adjoining townships. In Berkeley, Calif., and Winchester, Va., the city and county jointly maintain a jail. Similar arrangements exist for court-houses in many parts of the country.

"The first municipal power district in the history of Wisconsin, and probably one of the first in the country, was organized in 1935 by joint action of Polk and Burnett Counties, as the result of referendum election. Seventeen towns and four villages of these two counties voted to create an inter-county municipal power district. This is the first action taken under an optional law placed upon the statute books in 1931, and it is being watched with interest as an experiment pointing towards increased cooperation between governmental units in this field. The present district is designed to promote rural electrification.

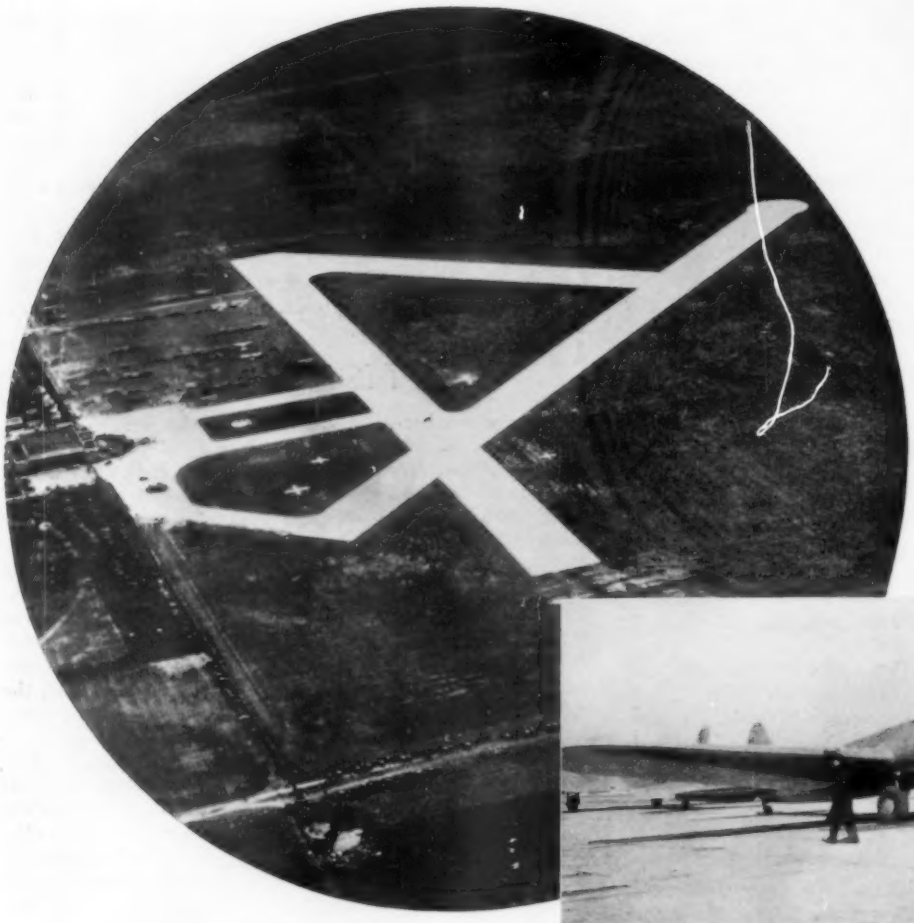
Miscellaneous

"A large number of miscellaneous arrangements exist. In Minnesota counties having more than 5,000 population, the offices of city and county attorney may be consolidated. St. Louis is authorized by city ordinance, state law, and act of Congress to cooperate with the Federal Government in the construction of a national park to be known as the Jefferson Memorial Plaza. In Council Bluffs, Iowa, the city and county maintain a joint permanent registration system for elections. The city of Portsmouth and Norfolk County, Va., jointly operate the Norfolk-Portsmouth ferry system. Malden and Melrose, Mass., jointly control a park located on the boundary line between the two communities. In Coshocton, Ohio, the sealer of weights and measures serves all the communities located within the county. Albert Lea, Minn., and Winchester, Va., operate joint city-county public rest rooms. A public market is operated jointly by the city of Royal Oak and Oakland County, Mich. Royal Oak is also serviced by the street-car system of the city of Detroit. Fort Thomas handles garbage disposal for Southgate, Ky. A similar arrangement exists between Winnetka and Glencoe, Ill. According to a new law in Indiana, the mayor and council of any city of less than 20,000, located in a county or region having regional planning or county planning commissions, may designate the county or regional planning commission as the city planning commission.

"Probably the most spectacular instance of intergovernmental cooperation in recent years is the compact between the city of New York and the state of California with reference to the marketing of artichokes, completed in January, 1936. Late in 1935 Mayor La Guardia launched a dramatic attack upon the racket which was charged with oppressive control of the city's artichoke business. California produces a large part of the artichokes consumed by New Yorkers, so growers from that state were interested in the Mayor's drive against this racket. As a result of a conference between the Mayor and the Chief of the Division of Market Enforcement of the California Department of Agriculture, a state-city compact covering the artichoke business was signed. Under the terms of this compact, the state and the city will exchange information regarding conditions and developments in the artichoke market for the purpose of preventing fraud, exploitation, and other unfair practices in distribution.

"Three of the most suggestive illustrations of the possibilities of voluntary cooperative action by different levels of government, analyzed in the foregoing pages, are (1) the county-city-town-village relationship in the field of electric power distribution in Wisconsin; (2) the central city-county-municipality-village relationship in the Los Angeles metropolitan area in the fields of taxation, health, public welfare, and sanitation; and (3) the city-county-library-school district relationship in the Cincinnati area in the field of purchasing. An additional illustration is the Key West, Fla., Administration, where the city, the county, and the school district are pooling their resources under the leadership of the Federal Government."

[1] Joeckel, Carleton B., "The Government of the American Public Library." University of Chicago Press, 1935, pp. 305-11.



Left—The Indianapolis Airport. These 6-year-old concrete runways are now being extended with WPA funds.

Below—Floyd Bennett Airport at Brooklyn, New York, uses concrete runways and aprons. To the 150,000 sq. yds. of pavement which has served since 1929, an additional 125,000 sq. yds. has been built with WPA funds.

Modern Airports need Concrete Runways

and Aprons . . . for Safety, Low Upkeep and Commercial Leadership

Steadily increasing weights of planes . . . and passenger insistence upon safe, clean, convenient ground facilities . . . combine to make concrete runways and aprons a necessity.

SAFETY—concrete provides exceptional visibility from the air day and night; its surface is non-skid without excessive roughness damaging to tires; it is clean—no dust, no dangerous flying particles.

LONG LIFE—concrete stands up under heavy traffic; bridges weakness of the sub-grade; is unaffected by adverse weather conditions.

ACCURATE DESIGN—concrete can be designed economically for any given wheel loads with ample safety factors.

GOOD DRAINAGE—without excessive crown that makes landings hazardous; concrete's smoothness and permanently set gradients eliminate pockets of standing water.

LOW ANNUAL COST—concrete is moderate in first cost and requires the absolute minimum of maintenance throughout its long life.

Take advantage of the proved economy and satisfaction of concrete and insure a position of leadership for your airport. We can help with free information sheets and the booklet, "*Concrete Makes a Modern Airport.*"

PORTLAND CEMENT ASSOCIATION
Dept. A10-4 , 33 West Grand Ave., Chicago, Ill.

Why not remember to mention THE AMERICAN CITY?

Forward Steps

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Letters to the Citizens

BINGHAMTON, N. Y.—The first of Binghamton's bi-weekly mimeographed letters to the citizens was issued on September 24, and appropriately presented a chart showing the organization and personnel of the various city boards and the heads of the city departments and bureaus. This is intended to be filed for reference, and forms a basis of understanding of future information furnished under this plan.

The idea was presented by the City Manager to the Finance Committee early in the summer as a means of keeping the City Administration in closer touch with the citizens. Each successive letter is to deal in a concise, understandable way with some one particular aspect of municipal administration. The letters are to be placed at certain strategic places throughout the city, where they may be obtained by those interested. From eight to ten thousand of the letters will be mimeographed every two weeks. They will be written by the administrative staff and edited by the Finance Committee of Council. The bulletin will not concern itself with controversial issues. A request will be included in all bulletins for constructive suggestions for improving the city service, to be signed and returned to City Hall.

C. A. HARRELL,
City Manager.

Civilizing Hallowe'en

MINNEAPOLIS, MINN.—The Hallowe'ens of 1934 and 1935 are memorable as the first when any organized, city-wide effort was made to re-direct the playful and too often lawless spirit of the ancient holiday into more desirable channels.

For a city of 464,000 people and 58 square miles, a city-wide carnival was not a workable scheme. Adequate supervision of as many as 100,000 youngsters, many of them seven or eight miles from home, would be impossible. After the festivities were over, the situation would invite high hoodlumism in downtown districts and street cars. It was apparent that decentralized effort was essential in a Minneapolis Hallowe'en program.

In 1933 and 1934, rampant vandalism broke loose in many cities throughout the United States. The story was the same in almost every large city. Mobs blockaded streets with overturned trucks, sections of wrecked buildings and débris. Police were greeted with rocks and vituperative language. Gangs damaged, fired, or demolished automobiles, wrecked buildings, and fought with fists and bricks. False fire alarms were turned in and hydrants were wrenched open to flood the streets. Radio alarms were broadcast at double and triple speed, police stations were overcrowded with hoodlums, but the grim game went on. In Chicago, gangs demolished Century of Progress buildings built at a cost of millions of dollars, and police were helpless.

With Scandinavian conscientiousness for keeping its house in order, Minneapolis thundered through press and pulpit that the problem of Hallowe'en vandalism and the lowering of citizenship standards must be met without delay. The notion that the destruction of property, a serious offense 364 days of the year, is a good-humored prank on Hallowe'en must be abandoned, the city agreed.

Its policy determined, Minneapolis went into concerted action within a month. The Y. M. C. A. invited other program organizations to a council of war. The resultant group, working as an executive committee, agreed on two major principles of operation. First, they pointed to the advisability of small home parties and small club parties on Hallowe'en—as many of them as possible. Second, they proposed to operate entirely through existing organizations interested in the project, which would cooperate as members of a Hallowe'en committee. The home, the club, the settlement house, the park, the school, working together year after year, would build a new civic habit of civilized Hallowe'ens. Twenty-five leading civic and social agencies interested themselves in the project, and A. G. Bainbridge, then Mayor, was named honorary chairman of the general committee.

The executive group, including Frank O. Koehler and Paul E. Bremicker, of the Y. M. C. A., John Tilden and George R. Boardman, of the Boy Scouts, R. C. Tapp, of the School Board, Karl Raymond, of the Park Board, and Clinton Chaffee, of the Citizens Club, met four times during the fall and early spring of 1934. On June 4 the general committee met, with Sheldon V. Wood, an officer of Rotary and the Law and Order League, as Chairman. The executive committee suggested the promotion of home parties on Hallowe'en, of small club parties, and finally, for those not included in the other two, of large public parties. The Parent-Teacher representative pledged his association to emphasize the primary responsibility of parents and to urge home parties. The Park Board outlined its plans for sports programs and stunt contests. The School Board announced that school gymnasiums and auditoriums would be open free of charge for Hallowe'en entertainments. Theaters promised special programs for young people, with surprise features, vaudeville, and appropriate decorative and sound effects.

Other meetings were held before Oc-

THE CHANGING NUMBER OF POLICE CALLS PER 1,000 BOYS ON HALLOWE'EN IN FIVE YEARS IN MINNEAPOLIS

COSTS LESS PER YEAR OF SERVIC

BECAUSE IT RESISTS DAMAGE FROM BOTH WEATHER AND TRAFF

(Top) Route No. 163 near Clinton, Indiana;
(Lower Left) Dodge Highway, Omaha Co., Nebr.

(Lower Right) Chicago Pike, Lucas Co., O
(Lower Center) South Sangamon St., Flint, M

● A record-breaking cold winter has been followed by a record-breaking hot summer. Yet brick pavements have come through unharmed.

Engineers are reporting current maintenance costs as negligible to nil on brick pavements. Some of these pavements have previously withstood a quarter of a century or more of all that weather and traffic could offer.

Brick pavements are the equal or better of any pavement in resistance to traffic damage. They excel other pavements in resistance to weather. They are non-absor ent—do not crack and spall with frost; they do not soft and rut with heat. They are skid-resisting and free fr glare. They are safe, comfortable pavements at all spee

Use brick to protect new pavements. Resurface fail pavements with brick and obtain the highest type road street at a low cost. For further information, wri National Paving Brick Association, (Affiliated with Structural Clay Products, Inc.) Natio Press Building, Washington, D. C.

BRICK

FOR NEW CONSTRUCTION OR RESURFACE JOB

tober 31. Each organization continued to work through its own members and in its usual manner, and the committee served to coordinate their work. Arrangements were announced for nearly 5,000 private parties, 500 school parties, and 130 public parties, and the committee prepared for the first real test of its ambitious plan.

On Hallowe'en the weather was cool and windy. From early evening the streets were thronged with youngsters; but this time they did not roam through alleys and idle on corners, looking for something to do. Following a questionnaire of the public school pupils, the executive committee announced that 94,000 youngsters had attended a private party, organization affair, or public entertainment on Hallowe'en. The power company reported 28 arc lights damaged; 350 had been smashed the preceding year. The Fire Department received 10 false alarms; 100 had been answered in 1933. One boy was arrested and held; 17 had been jailed for 1933 disorders.

Within a week the committee reorganized as a permanent organization and elected an executive committee of eight, with Paul Bremicker as chairman. The Park Board made a spot map of the city, representing the public and private parties and the police calls in each ward, and distributed it to participating groups. The committee investigated the most successful types of parties and compiled bibliographies and material for planning them. It outlined a financial campaign and appointed a treasurer whose task was to raise $1,000 by subscription among business men for use in financing parties and programs in underprivileged neighborhoods. It hired a publicity secretary to handle newspaper stories, features, pictures, a Hallowe'en party plan contest, and women's page material. It advised the Mayor to send a letter to all P. T. A. presidents, pointing out their strategic position for securing the cooperation of parents, and suggested a follow-up letter to all the parents of Minneapolis, brought home by each pupil, explaining how they might help the committee.

In 1935, the task was more difficult than in 1934, for Hallowe'en was a half-holiday for all public schools, and the next day a full holiday. Public affairs, large and small, in each neighborhood were listed fully and prominently in each newspaper, with the comment that every one could find among them something to his liking. Small private parties were held in thousands of homes last October 31, and the number of organizations cooperating with the committee was nearly doubled. Observance was quiet and orderly. Police calls for boy trouble averaged 1.36 calls per 1,000 boys from 10 to 20 years; compared with the 1933 ratio of 4.76.

One gang of boys spent the night at camp seven miles out of town, where they were scared delightfully by a mystery hike through the dark woods, fed, and regaled with spooky campfire stories afterwards. Another group donned old clothes to shock corn for a farmer, and finished the evening around a blazing fire. Every one had something exciting to do.

A full account of the Minneapolis plan and the part played by each organization, together with scores of excellent suggestions for Hallowe'en parties large and small, is being compiled by Youth Administration workers under the direction of the committee. It will be published this summer as the Hallowe'en Handbook and made available to the general public.

FRANCES SOMERS,
Information Secretary, The Minneapolis Hallowe'en Committee.

Low-Cost Electric Heat

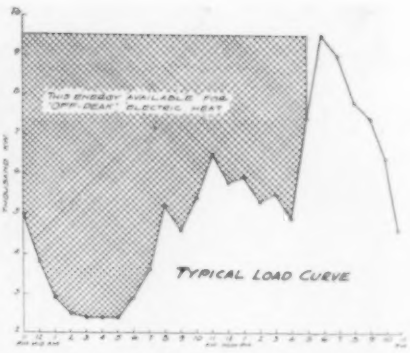
SPRINGFIELD, ILL. — The heat-storage principle in water tanks is used in Springfield in order to place electric house heating on an off-peak (see chart) at the following rates per kwh:

1 cent for the first 500 kwh
0.75 cents for the next 1,000 kwh
0.60 cents for all over 1,500 kwh

These rates apply for 18 hours per day—11 P.M. to 5 P.M. By proper insulation it is possible to reduce the heating cost per season to as little as $55 to $60 for a five-room house. Here in Springfield the cost of fuel for a coal-fired house is less than $60; but the advantages of electric heating in cleanliness, safety, convenience and uniform temperature are worth that much if coal were free.

It costs more to build an insulated house, and we have not proposed the use of electric heating in houses that have not been built for it. This additional cost, however, is offset by the advantages already set forth, and by such economies as the omission of chimney, fuel room, and even the entire basement if desired. The insulated house, moreover, has advantages in summer as well as in winter, and can of course easily be air-conditioned.

The heating plant involves no new principles. It is essentially a warm-air system with circulation forced by a fan or blower. Water tanks are used only to provide heat storage from 5 P.M. to 11 P.M., when electrical energy is cut off from the tanks by a time switch. If hot water heat is preferred, it can easily be had. A room thermostat starts the circulation of air (or water) when heat is required in the living quarters.



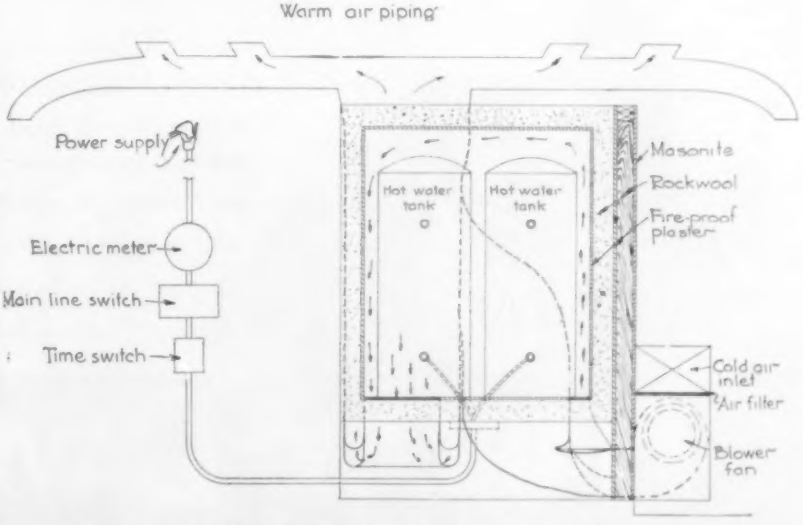
SHADED AREA SHOWS ELECTRIC CAPACITY AVAILABLE FOR HEAT LOAD

CHARLES H. SPAULDING,
General Superintendent, Department of Water, Light and Power.

An Iowa City Constructs a Rustic Stone Picnic Shelter House

RED OAK, IOWA.—A rustic stone and timber-roofed combination picnic shelter house has recently been completed in the American Legion Park in Red Oak.

The building consists of three sections: the one to the north is an enclosed room for dining and camp cooking; the central section is open, with a fireplace for cooking, and space for parking cars in inclement weather, with a paved driveway accommodating several automobiles; and the section to the south is occupied by



SECTION OF ELECTRIC HOUSE HEATING PLANT

Essentially a warm-air system, with water tanks to provide heat storage when time switch disconnects current from 5 P.M. to 11 P.M.

Require HARLEY-DAVIDSONS

During the long summer vacation period motorists have become negligent of warnings to slow up in school zones. If injuries and deaths are to be prevented all motorists must be sharply reminded to heed your signs —"SCHOOL ZONE—GO SLOW!"

Officer James Cassier, Hoboken, N. J. Traffic Police.

Dispatch motorcycle traffic officers to these danger spots at once! Protect the hundreds of youngsters who are going back to school. And remember — traffic control and the protection of lives is *simplest, easiest, most thorough, effective and economical* — when traffic squads are Harley-Davidson equipped!

See your nearby Harley-Davidson Dealer now — or write us.

Harley-Davidson Motor Co., Dept. M, Milwaukee, Wis.

HARLEY-DAVIDSON
The Police Motorcycle

SHELTER HOUSE, AMERICAN LEGION PARK, RED OAK, IOWA

toilets for men and for women.

The walls of the building are of rock obtained from a nearby quarry. One part of the structure has a rustic wall with points and edges very rough; other walls were laid smooth, and all the walls of the building are 16 inches in thickness. Rough native timbers cut near Red Oak formed the roof units of the building, and shake shingles were used as roofing material.

Reinforced concrete floors of 4- and 5-inch thickness are laid in the two enclosed sections, with 2-inch expansion joints around each edge. The enclosed dining room is 20 x 36 feet, with two stone stoves in the south end of the room. The central section is 27 x 42 feet, and the open fireplace joins the stoves of the enclosed room. The toilet end of the structure is 17 x 20 feet.

The building was financed with $820 furnished by the city of Red Oak; State IERA, $5,825.80; FERA, $2,681.31, amounting to $9,327.11. It is claimed that about $2,000 will still be available when the project is finally completed.

ALLAN P. CHILD.

The New Memorial Building in Hibbing

HIBBING, MINN.—The plan of the new building that has taken the place of the first Memorial Building in Hibbing, burned almost 3½ years ago, is the result of a careful study of Hibbing's 89 civic organizations and clubs, which were consulted through a questionnaire. All parts of the building are for the general use of the public. Although it was not possible to carry out all requests that were received, the building as finally planned meets in general every facility demanded by this community of 15,666 through its civic bodies. Some of these facilities—rifle range, Boy Scout and band quarters—remain for future completion. More than 100,000 square feet of floor space is provided.

On each side of the main reception hall is a flat-roofed wing containing club rooms. Around the main club room for women's organizations are small committee rooms with separate dinette facilities for refreshments. The curling-club quarters constitute virtually a separate building between the main and ground floors. There are seven standard-sized rinks and a heated gallery for spectators. The war veterans quarters include a reception room, a game and reception room, and a meeting hall seating 300. Adequate provisions have been made for cooking and serving refreshments.

The massive arena is capable of accmodating a hockey game in the afternoon and a reception or dance on the same floor in the evening. Heating of the spectators' sections and refrigeration of the skating floor may be obtained at the same time. The floor is made of terrazzo with refrigeration pipes built in. Ice can be made on the terrazzo in a few hours.

NEW MEMORIAL BUILDING IN HIBBING, MINN.

Four team rooms in the basement, with shower and rub-down rooms, are directly accessible through passages from the arena. The seating capacity of 3,600 on the two sides can be doubled by additional bleachers and chairs. The entire arena could seat almost 10,000 persons.

High up on the east end is a musicians' platform, and at one end of the floor is a refreshment stand. There is no obstruction to the spectators' view. The entire weight of the steel roof is held by four huge steel trusses with spans of 175 feet, the ends of which, hinged on cement abutments reaching well down into the ground, allow for expansion and contraction.

The building was dedicated last November. It is of steel and reinforced concrete faced with yellow brick, severely simple in style, without cornices or outside decorative treatment, and covering more than a city block in area. The building and grounds cost $547,000; the furniture and fixtures, $15,000; the kitchen and dining-room equipment $2,500; total $564,500.

The foyer is 100 feet wide, 40 feet high, and 35 feet long, with walls and ceiling in graded shades of green. The floor is of gray and black mastic tile. Concealed lighting over the five double entrance doors is reflected both upward and downward. Attractive and comfortable furnishings adorn the foyer.

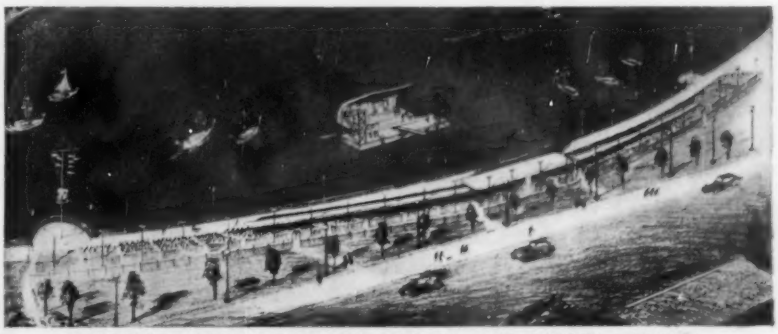
In the basement is a little theater seating 400. It has a sloping floor, a large stage, and a motion picture booth. The concealed lights in the ceiling can be dimmed as desired. In the northeast end of the basement a corridor furnished with davenports, easy chairs, and floor lamps leads to a large dining and dancing hall with a capacity of six to eight hundred. The floor is of red and black squares of mastic tile. The room may be divided by sliding doors. A large kitchen equipped to meet all requirements of the building opens from one side.

The Memorial Building experienced an active season last winter, proving its value to the citizens of Hibbing.

S. E. TWIGG,
Mayor.

Lagoon Theater in Burnham Park, Chicago

THE Chicago Park District recently remodeled the remnant of The World's Fair Lagoon Theater, consisting of the Amphitheater and covered platform located in the water of the lagoon. The new arrangement will be used for all kinds of water sports, including water-polo, Olympic trials, swimming and diving contests. All work was done under the supervision of H. O'Hare, Supervisor of Beaches and Golf, and V. K. Brown, Chief of Recreation. Ralph Burke is Chief Engineer, and George T. Donoghue General Superintendent.



REMODELED REMNANT OF THE WORLD'S FAIR LAGOON THEATER, BURNHAM PARK, CHICAGO

Small Cities—

Here's your 2-way Police Radio Telephone!

THIS ultra-high frequency 2-way Western Electric equipment is specially designed to give you complete coverage at low cost. It is simple to operate—high in quality—thoroughly dependable like all the Western Electric apparatus now giving added protection to over 35 million people!

This headquarters equipment operates from the ordinary 110 volt AC line. It consists of an ultra-high frequency radio transmitter and receiver and handset microphone. It assures clear, dependable communication with patrol cars.

Companion mobile equipment for cars is compact, sturdy, proved reliable in police service in numbers of cities. For booklet giving full details, write Graybar Electric Co., Graybar Building, New York.

NOTE: Equip your municipal ambulances with 2-way radio, too. It enables them to make more runs per day—saves time when it counts most!

Western Electric Headquarters Unit—21A Transmitter for local or remote control, 19A superheterodyne Radio Receiver, and handset microphone.

Western Electric

Distributed by GRAYBAR Electric Co. In Canada: Northern Electric Co., Ltd.

POLICE RADIO TELEPHONE EQUIPMENT

Comparative Street Department Costs for 94 Cities

Bureau of the Census Releases Reports for 1926, 1933 and 1934

STATISTICS relating to street department expenses for the 94 cities having a population of more than 100,000 for the fiscal years 1934, 1933 and 1926 have been released by the Bureau of the Census. The per capita costs for 1933 and 1926 are based on the estimated populations as of the middle of the fiscal year of each city, and those for 1934 are based on the estimated population as of July 1, 1933, no later estimates having been made, except for Washington, D. C., which is estimated as of January 1, 1934.

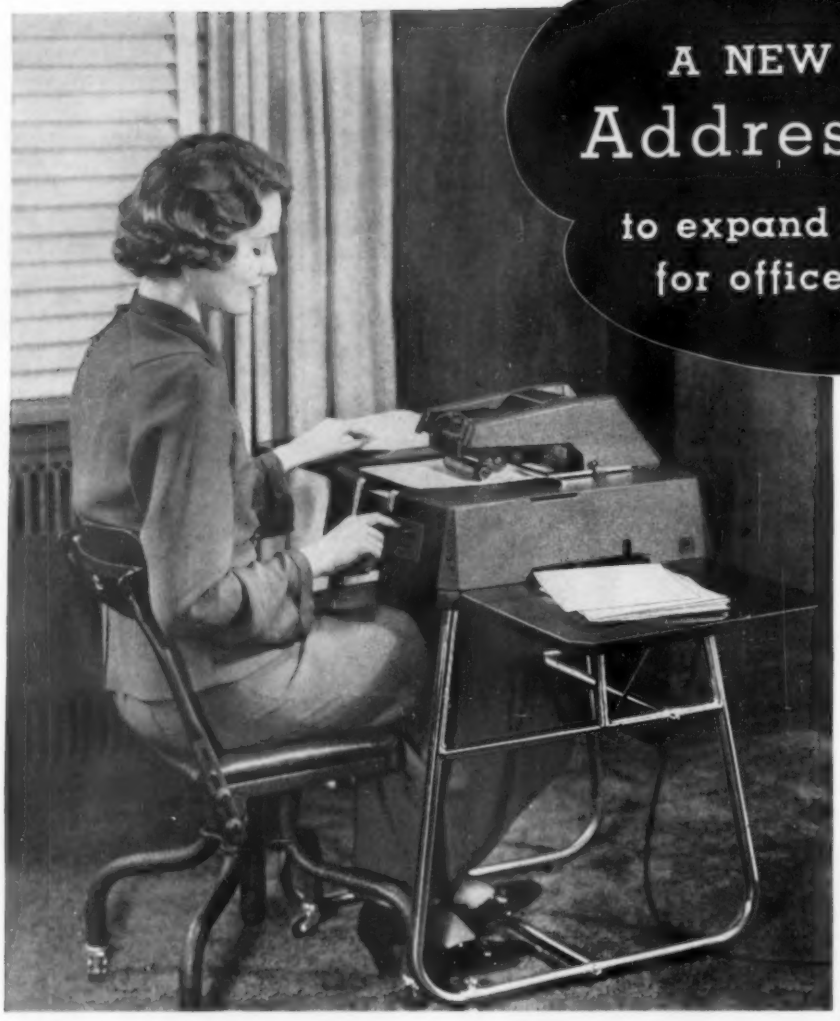
The statistics which follow cover the government of the city corporations proper and also independent districts practically coextensive with the cities. They also include a percentage of the financial transactions of the county governments for cities having over 300,000 population, in order that data for such cities may be comparable with those of other cities in this class in which the ordinary county functions are performed by the city government.

Included in the expenses of the street departments are payments for supervision, upkeep of streets and alleys, repair of bridges, removal of snow and ice, lighting of streets, control of traffic, and dredging of waterway channels, although it is not understood just what this last item has to do with the operation of a municipal street department. The classification of expenditures is based on functional activities and not on fund or budgetary appropriations.

PAYMENTS FOR OPERATION AND MAINTENANCE OF HIGHWAYS COMPARED WITH PAYMENTS FOR OPERATION AND MAINTENANCE FOR ALL GENERAL DEPARTMENTS: 1934, 1933, AND 1926

City	Operation and Maintenance of Highways[1] 1934 Total	1934 Per Capita	1934 Per Cent of All General Departments	1933 Per Capita	1933 Per Cent of All General Departments	1926 Per Capita	1926 Per Cent of All General Departments
GRAND TOTAL	$108,065,975	$2.88	6.2	$2.87	6.2	$3.64	8.8
Group I	68,361,904	3.10	5.7	3.19	5.9	4.00	8.7
Group II	15,560,871	3.37	7.7	3.13	7.4	3.54	8.8
Group III	24,143,200	2.21	7.2	2.12	6.6	2.96	9.2
Group I.—Cities of 500,000 and Over							
New York, N. Y.	$23,407,044	$3.27	4.6	$3.82	5.6	$3.95	8.1
Chicago, Ill.	10,739,045	3.08	8.5	2.55	6.4	3.27	8.0
Philadelphia, Pa.	4,595,387	2.33	5.9	3.07	7.7	2.62	6.2
Detroit, Mich.	4,061,160	2.44	5.6	2.12	5.1	4.71	10.7
Los Angeles, Calif.	3,963,367	2.93	5.4	4.02	7.4	5.17	9.5
Cleveland, Ohio	2,719,371	2.96	6.4	1.93	4.3	3.93	8.9
St. Louis, Mo.	1,874,661	2.26	6.0	2.30	6.2	3.16	8.6
Baltimore, Md.	2,890,865	3.54	8.5	3.21	8.3	3.95	11.5
Boston, Mass.	3,205,572	4.07	5.5	3.84	5.1	5.01	8.1
Pittsburgh, Pa.	2,727,904	4.02	8.1	3.51	7.4	6.59	12.9
San Francisco, Calif.	1,293,803	1.97	3.9	1.83	3.6	2.25	5.3
Milwaukee, Wis.	1,769,756	2.95	4.8	2.44	4.4	4.49	10.3
Buffalo, N. Y.	2,223,360	3.80	5.3	4.39	6.0	6.26	11.4
Washington, D. C.	2,890,609	5.84	8.4	3.96	6.3	6.12	11.4
Group II.—Cities of 300,000 to 500,000							
Minneapolis, Minn.	1,902,500	3.98	7.9	2.55	6.3	4.11	10.2
New Orleans, La.	1,245,049	2.64	10.4	2.62	10.5	2.63	10.1
Cincinnati, Ohio	1,700,697	3.70	7.1	3.71	7.8	4.46	11.0
Newark, N. J.	945,433	2.12	3.5	1.76	3.0	3.50	6.1
Kansas City, Mo.	1,729,147	4.19	12.7	4.24	11.9	4.79	11.8
Seattle, Wash.	2,000,806	5.35	13.6	5.33	13.3	4.21	10.3
Indianapolis, Ind.	1,044,743	2.81	8.3	2.13	5.9	2.42	6.7
Rochester, N. Y.	1,462,786	4.39	5.9	4.29	6.7	4.00	7.5
Jersey City, N. J.	985,330	3.08	4.9	3.06	4.7	3.46	6.2
Houston, Texas	861,860	2.71	11.7	2.51	11.3	[2]2.72	[2]11.1
Louisville, Ky.	771,512	2.43	7.6	2.63	8.3	3.19	11.9
Portland, Ore.	911,008	2.95	8.3	3.00	7.3	[2]2.20	[2]7.2
Group III.—Cities of 100,000 to 300,000							
Columbus, Ohio	$502,708	$1.68	6.6	$3.79	12.3	$2.05	7.2
Toledo, Ohio	687,664	2.30	8.8	3.36	10.3	4.79	15.1
Oakland, Calif.	597,029	2.02	6.4	2.05	6.0	2.32	6.6
Denver, Colo.	828,715	2.83	6.8	3.38	8.2	3.86	9.2
Atlanta, Ga.	406,437	1.45	5.5	1.46	5.9	2.02	7.8
Dallas, Texas	264,133	.95	4.9	.90	3.6	2.59	10.7
St. Paul, Minn.	480,637	1.73	6.5	1.97	7.0	2.87	9.2
Birmingham, Ala.	257,285	.94	6.2	1.02	6.5	1.26	6.3
Akron, Ohio	347,551	1.31	5.8	1.30	5.4	2.69	10.6
Memphis, Tenn.	400,083	1.53	8.1	1.25	6.9	2.55	9.4
Providence, R. I.	830,965	3.25	7.4	2.56	5.3	3.89	10.7
San Antonio, Texas	179,198	.74	5.2	1.03	7.1	2.78	12.8
Omaha, Nebr.	350,824	1.61	6.7	1.67	6.4	2.11	6.4
Syracuse, N. Y.	558,654	2.60	4.8	2.16	4.3	4.17	10.7
Dayton, Ohio	392,132	1.90	7.9	1.93	6.3	2.75	9.2
Oklahoma City, Okla.	163,247	.81	4.6	1.11	5.6	1.65	8.0
Worcester, Mass.	1,185,163	5.99	11.0	3.74	7.0	4.52	9.8
Richmond, Va.	384,391	2.08	6.8	1.99	6.1	2.73	9.5
Youngstown, Ohio	372,399	2.14	6.8	2.11	6.3	2.84	10.3
Grand Rapids, Mich.	281,838	1.63	5.8	1.95	5.2	1.73	4.9
Fort Worth, Texas	203,194	1.50	6.7	1.52	7.1	1.85	8.8
Hartford, Conn.	495,323	2.94	5.6	2.90	5.4	3.48	8.1
Flint, Mich.	224,428	1.34	4.4	1.07	3.9	1.63	5.8
New Haven, Conn.	448,082	2.75	6.0	2.34	4.9	2.59	6.8
San Diego, Calif.	353,316	2.21	7.9	2.18	6.7	2.84	8.3
Long Beach, Calif.	387,397	2.47	7.0	2.18	6.0	4.98	11.4
Nashville, Tenn.	201,617	1.29	6.0	1.59	7.7	2.41	11.8
Springfield, Mass.	762,137	4.97	8.7	3.58	5.9	6.04	12.0
Tulsa, Okla.	166,872	1.13	5.7	1.62	7.1	1.52	5.2
Bridgeport, Conn.	397,931	2.70	5.1	1.66	3.3	2.34	6.4
Des Moines, Iowa	411,206	2.83	10.0	2.84	9.1	3.08	8.4
Scranton, Pa.	227,366	1.57	5.0	1.56	4.6	2.22	7.5
Salt Lake City, Utah	339,536	2.35	8.6	2.28	9.0	2.64	9.4
Yonkers, N. Y.	479,660	3.41	5.1	3.98	5.6	3.50	6.7
Paterson, N. J.	191,131	1.38	3.1	1.15	2.8	1.85	4.7
Jacksonville, Fla.	427,643	3.08	12.0	3.35	13.1	3.76	13.5
Albany, N. Y.	919,901	7.09	13.3	4.84	10.0	3.63	9.7
Norfolk, Va.	148,186	1.14	3.9	.98	3.9	1.67	5.9
Trenton, N. J.	319,540	2.57	7.1	2.48	5.8	3.21	8.4
Chattanooga, Tenn.	225,114	1.82	9.5	1.63	8.8	1.78	7.3
Kansas City, Kans.	114,138	.92	5.2	1.18	5.4	1.76	7.5
Fort Wayne, Ind.	88,419	.74	3.7	.72	3.3	1.68	6.7
Camden, N. J.	191,827	1.61	5.3	1.47	4.5	2.99	8.8
Erie, Pa.	178,893	1.51	6.2	1.65	6.4	2.24	8.9
Elizabeth, N. J.	240,777	2.04	5.6	1.82	4.5	2.24	7.1
Wichita, Kans.	120,243	1.02	4.3	.99	4.2	1.31	5.2
Spokane, Wash.	310,625	2.66	11.5	2.39	9.6	2.21	7.5
Fall River, Mass.	234,496	2.03	6.1	1.68	5.1	4.27	9.6
Cambridge, Mass.	240,374	2.10	4.2	1.91	3.7	4.78	10.9
New Bedford, Mass.	254,574	2.26	6.1	2.06	5.4	3.30	7.6
Reading, Pa.	252,757	2.26	8.3	1.77	6.4	2.81	11.6
Knoxville, Tenn.	168,036	1.52	7.4	1.85	8.4	3.38	14.2
Peoria, Ill.	275,846	2.51	10.0	1.72	6.9	2.01	8.6
South Bend, Ind.	299,906	2.74	13.4	1.24	6.1	1.49	5.5
Tacoma, Wash.	295,915	2.73	10.4	2.62	9.8	2.97	10.3
Miami, Fla.	381,870	3.53	12.0	3.33	11.9	14.95	28.7
Gary, Ind.	131,672	1.22	5.3	2.12	8.9	1.09	3.5
Canton, Ohio	487,934	4.54	19.2	2.33	10.5	2.49	10.1
Wilmington, Del.	153,352	1.44	5.2	1.39	4.8	2.19	8.4
Tampa, Fla.	234,342	2.20	9.9	2.48	10.7	2.29	6.8
Somerville, Mass.	328,788	3.11	7.5	2.43	6.4	2.11	7.3
El Paso, Texas	84,979	.80	5.5	.97	5.8	1.05	4.7
Evansville, Ind.	227,607	2.17	10.6	1.44	6.9	1.33	6.1
Lynn, Mass.	253,680	2.47	5.5	2.42	5.4	3.35	9.9
Utica, N. Y.	404,613	3.94	8.3	3.60	8.1	2.34	6.8
Duluth, Minn.	181,819	1.78	5.8	1.56	5.3	2.86	8.3
Waterbury, Conn.	719,761	7.11	15.4	5.78	13.7	5.52	13.2
Lowell, Mass.	435,234	4.34	11.0	4.11	10.5	5.23	12.9

[1]Exclusive of repair for compensation. [2]Percentage of county transactions not included.



A NEW ELECTRIC Addressograph to expand opportunities for office SAVINGS!

SPEED in getting things done *on time* and accuracy in getting them done *right* are two of several requirements in municipal offices which Addressograph has been fulfilling over a long period of years in hundreds of cities throughout the country.

And now, to the many Addressograph models, is added the new Class 900 . . . a fast, versatile name- and data-writing machine priced far below any previous electrically-operated model and replete with features never before available.

Being typewriter size and quiet in operation, the Class 900 can be used in any office to perform any of the tasks listed at the right . . . and many more. Write for copy of 32-page booklet and arrange with our nearest office for a demonstration without obligation. Addressograph Division, ADDRESSOGRAPH-MULTIGRAPH CORPORATION . . . . Cleveland, Ohio.

This partial list suggests a few time- and money-saving opportunities for municipal offices:

TAX OFFICES—Lists property owners' names and addresses, property valuations and descriptions on tax rolls, delinquent rolls and bills. Speeds up tax billing, gets money in sooner and saves interest on borrowed funds. Makes installment collections simple and automatic. The outstanding tax collection records are made in cities where Addressograph is used.

UTILITIES OFFICES—Writes customers' names and addresses, account and folio numbers on water, gas, electric, telephone and other bills. Fills in meter readers' forms. Does work in hours which formerly took days . . . in days which formerly took weeks. Accurate, speedy and efficient.

LICENSE BUREAUS—Fills in licenses with names, addresses, types of business, specifications, numbers. Fills in application forms. Addresses envelopes. Makes the operation of a license bureau almost entirely automatic.

VOTERS' REGISTRATION BUREAUS—Provides self-copying lists of voters which may be used in many ways. Election notices, registration notices, sample ballots, etc., are easily mailed out. Election officials are quickly furnished with a last-minute accurate list of registered voters.

STREET AND GARBAGE DEPARTMENTS—Organizing and routing workers for street cleaning, snow removal, garbage and rubbish collecting is made a very simple matter when Addressograph is used. Better service can be given to citizens which builds good will for the administration.

STORES DEPARTMENTS—Lists of materials and requisitions are quickly and accurately prepared with Addressograph. Tags and labels are quickly addressed. Inventory control is made easy, delays are avoided.

DISBURSING OFFICES—Addressograph writes names, dates, amounts, numbers and signatures on checks. It lists payroll, relief, accounts payable and bondholders sheets. It fills in practically all forms used in disbursing departments. Makes the work accurate and automatic.

POLICE DEPARTMENTS—Lists Police Patrol Reports. Prints and addresses stolen car reports and addresses other criminal notices for distribution to other police departments.

ADDRESSOGRAPH REDUCES EXPENSE

During October we hope you will remember to mention THE AMERICAN CITY

Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 1 Park Ave., New York
Paul L. Green, Chairman; John Gibala, Vice-Chairman; Donald M. McNeil, Dwight M. McCracken, D. Grant Mickle, Robert A. Mitchell, Edward J. O'Meara, John C. Wrighton, Charles G. Beckenbach, Bruce D. Greenshields, Leslie J. Sorenson, Charles H. Rex, Tracy D. LeMay

The Signal Manufacturer and the Municipality

By K. W. MACKALL
Engineer, Crouse-Hinds Co.

IN designing and marketing a line of traffic signals and controls, the manufacturer assumes an obligation which must necessarily continue for years to come. With development in the art of signaling, that obligation becomes greater, and the manufacturer must at all times stand ready to serve the municipality.

There will always be a need for signals, and as the traffic movement becomes more dense and more complicated, the signal system must increase in flexibility. It must function properly day in and day out, with very little attention or service.

The job of selling signal equipment to cities is more than merely having suitable equipment at a price — equipment that will, with some stretch of the imagination, just meet the specifications and a price just one cent lower than the other fellow's. Not only the steady movement of traffic, but the very life of citizens depends on the efficiency and reliability of the traffic signal system.

In designing signal equipment, the manufacturer must bear in mind the conditions under which it must operate. For the most part, traffic signals operate 16 hours a day as "Stop" and "Go" signals, and in many cities the light continues to flash during the off-duty hours. This means that the system is working 24 hours a day. It must operate in all kinds of weather and in temperatures ranging from 25 degrees below zero to better than 100 degrees above zero.

No particular attention is given to the signal equipment once it is installed on the street; but it must be maintained. Maintenance should consist of periodic renewal of lamps, and cleaning the exterior surfaces of the lenses. The signals are made reasonably dust-tight, so that it is only infrequently necessary to dust off the reflectors themselves and the inside of the lenses. Every time a lamp is renewed, the maintenance crew should wipe off the exterior surfaces of all lenses; and if this is done, the signal visibility will be materially increased.

The controls which operate the signals should of course be given regular periodic inspection, at which time the mechanism should be oiled and the contacts inspected for wear. Controls have been returned to us for repair that apparently had not been touched for several years, and it is a wonder that they would operate at all.

New Designs

The signal manufacturer must keep abreast of the times and bring his equipment up to date, making use of the newest designs of reflectors, lenses, lamps. The basic design of the signal should not be changed frequently, or the municipality will have several different types of signals and controls of the same manufacturer, the parts entirely different yet the signals performing the same function.

Flexibility of Design

The complicated traffic movements of today, caused mainly by irregularly shaped intersections and by increased volume of pedestrian traffic, are making it necessary to add arrow lenses and special "walk" signals to the older three-color signals. Therefore, the signal design must be such that a fourth or even a fifth section may be added to the signals without undue expense. The modern signal is designed in sections, a separate section for each indication, and the various castings are all interchangeable, so that a section may be removed or another one added merely by obtaining another section and adding it to the length of the tie-rod. This means that a city can, at will, change its signals and add sections when they become necessary.

Today the only difference between a one-way signal and a four-way square signal is the housing into which the optical systems are placed. The reflector, receptacle, doors, hoods, and lenses are the same for all models.

Another thing to be borne in mind by the municipality is to purchase signals from a manufacturer who has been in business for some time and who plans to stay in the traffic signal business.

Special Equipment and Service

Almost every city has one or more corners which are irregularly shaped and which need special equipment, and the manufacturer must stand ready to furnish this special equipment along with his regular line of signals, because only by having available all the equipment necessary can a manufacturer properly serve a municipality.

Very few municipalities have traffic engineers whose sole duty is to study traffic problems and solve them according to their local requirements. When called upon to do so, the manufacturer must provide promptly an engineer who will study the problem and offer the proper solution. Often this can be done by sending to the manufacturer a map of the intersection drawn to fairly large scale, together with a traffic count of the intersection. The manufacturer's engineer is able to use his wealth of experience gained in other cities over a period of years.

Modern traffic signal systems, designed to keep traffic moving continuously, require a control system consisting of a master timer and a secondary at every intersection. The function of the master is to supervise all the secondaries and keep them in the proper time relationship. In setting up such a system, considerable engineering experience is necessary, and the manufacturer must furnish to the municipality a time space graph showing how the secondary timers are to be set to get the best traffic movement. In order to do this, it is necessary for the municipality to furnish the following information:

1. Large-scale map of the streets to be controlled, showing all intersections. The map should give exact distances between centers of intersections, and all street widths from border line to border line.

2. A traffic count showing volume of traffic in each direction at every intersection. If such a traffic count is not available, someone in the municipality must make a reasonably good guess as to the relative proportion of traffic moving north-south and east-west at all intersections.

3. The speed at which it is desired traffic should move.

With these three factors, the competent traffic engineer can lay out a good time space graph. Many cities, in addition to furnishing this information, insist upon determining the total period of the time cycle of the controls. Speed at which traffic is to move, together with the block length, will govern the total period. Therefore, both the speed and the total period cannot be arbitrarily set in advance. All cities have certain speed laws, and the traffic signal system must be made to conform to such laws.

Once a traffic signal system has been sold to a municipality, the real obligation

TAX RECEIPTING *and* CASH CONTROL

WITH MAXIMUM PROTECTION . . . GREATER SPEED AND EASE IN HANDLING THE WORK

This phase of accounting is one of the most vexing that tax collection departments have to face. Burroughs offers an ideal solution . . . in a tax receipting machine that prints on the receipt—in distinctive figures—the serial number, tax bill or property description number, date, amount of payment and cashier identification. A transcript of each receipt is printed on a locked-in, detail tape and a total is accumulated in the machine against which the cash must balance at the end of the day. This total is available only to an authorized person. This affords maximum protection to clerk, tax collector and city.

Burroughs Tax Receipting Machine also speeds up the work, permitting the clerk to wait on more customers, thus serving taxpayers better. It can also be used as a fast, practical adding machine for all kinds of figure work incidental to tax accounting.

The low price of the machine—the work it does—and the many uses to which it may be put, make it a wise and profitable investment for any municipality.

For complete details, together with a demonstration, telephone the local Burroughs office. Or, if you prefer, check and mail the coupon.

Burroughs

Governmental Division, Burroughs Adding Machine Company, Detroit, Michigan

Without obligation, send me complete information about the newest mechanical equipment for handling the accounting problems checked below.

Tax Accounting ☐ Budgetary Control ☐ Fund Accounting ☐ Stores Records ☐ Payroll and Check Writing ☐
Purchase and Payment Records ☐ Revenue and Expense Distribution ☐ School Board Accounting ☐
Municipal Utility Accounting ☐ Institutional Accounting ☐

Name_____ Title or Position_____

Address_____

Mention THE AMERICAN CITY—it helps.

of the manufacturer begins. He is, first of all, obligated to give to the city not only good equipment, but complete instructions in the form of blueprints and engineering data, so that the municipality itself or the electrical contractor may install the equipment, connect the system, and place it in operation.

As I see this problem, not only is there an obligation on the part of the manufacturer to make good equipment, to furnish proper installation data, to keep available repair and maintenance parts, but it is also his obligation to render engineering service to the city as long as the equipment is used. There is also an obligation on the part of the municipality to treat the signal equipment fairly, to maintain it properly, and to see that it has a fair chance to perform its important function 24 hours a day.

—From a paper delivered before the National Municipal Signal Association, Hotel Pennsylvania, New York City, August 31—September 3, 1936.

Handling Philadelphia Traffic

By T. E. TRANSEAU

Assistant Director, Department of Public Safety, Philadelphia, Pa.

PHILADELPHIA has some 600 intersections at which traffic signals have been erected. In addition, there are nearly 20,000 signs of various types, including PARKING signs, and some hundreds of STOP and CAUTION signs. These signs have mostly been erected since 1930, when the Traffic Engineer's office was established in Philadelphia, and at least 200 more intersections could be signalized to advantage. Some of these are urgent, others could take their place in development of THROUGH STREET systems which would gradually lead to better and more orderly movement of traffic and would ultimately result in increased traffic safety.

Philadelphia has been woefully lacking in traffic islands, separators, loading platforms and channelization islands, which have elsewhere so demonstrated their worth. We have in Philadelphia many wide streets, some 80 to 90 feet wide, which pedestrians must cross. We likewise have many extremely large intersections, usually caused by the intersection of our broad diagonal arteries with points on the gridiron street plan, and many of these places have been scenes of frequent accidents due to uncertainty on the part of motorist and pedestrian. A start has been made towards ending this condition as far as funds will permit. Two islands have been installed on the west side of City Hall, and more are planned.

Divided Roadways

Twenty years ago, we had a number of streets known as "elastic streets"—the center portions were grass plots. I think the principal idea was that paving costs would be lessened, and if traffic ever required it, the grass plot site could be paved over. I do not believe today that anyone would advocate removing grass plots from these streets, for they have served to divide traffic, served as refuges for the pedestrian and, outside of some question of a little better design at the ends, are thoroughly satisfactory.

Narrow Streets

Thomas Holme, William Penn's Surveyor General, was a man of vision, and progressive for his day and age. The datum plane that he established above high water is still used by the city surveyors, and he was the father of the 50-foot street idea by means of which hundreds of miles of city streets in Philadelphia have 26-foot cartways and two 12-foot sidewalks. I understand that the people of his day thought he was extravagant.

Many of these streets we have been compelled to operate as one-way streets for years. As far back as 1925, the City Council passed an ordinance by means of which any street on which a trolley car operated in a single direction automatically became a one-way street. With a few exceptions, this rule holds good throughout the entire city. While it was somewhat confusing to strangers from other cities with wide streets, they soon got used to it, and in fact there have been many favorable comments on this feature of the Philadelphia street system.

Parking

When trolley cars operate on narrow streets, they leave little room for parking or movement. At one time, six or eight years ago, the City Council passed an ordinance barring all parking in the central section of the city, river to river, and from Pine to Vine Streets, a distance of about a mile in one direction and ¾-mile in another. This had to be modified. In 1934 another change was made permitting half-hour parking on Chestnut and Walnut Streets, and one-hour parking on the north-and-south streets. Naturally, this slowed down traffic considerably through the central district. Many parking lots have been laid out in the last few years. It is now possible to park all day within a block of City Hall for 15 or 20 cents.

Enforcement

Our enforcement record in the past has been very poor indeed. In recent years, until the beginning of the present administration, it was common to find 90 per cent, or more, discharges for all classes of traffic violations and a very small fine imposed on the remaining few. The present administration has set up a Traffic Court in which impartial justice is dealt to all and no ticket fixing is permitted. While the results in accident reduction have been small, it is believed that as the motorist learns he is likely to be made to pay for traffic violation, we shall get better observance of our laws.

Signal Systems

We have a number of signal systems in Philadelphia, notably those on Chestnut and Walnut Streets in West Philadelphia, one-way streets, and on North Broad Street from City Hall to Roosevelt Boulevard. The first two streets have caused very little trouble since they were signalized, inasmuch as they are one-way streets and it is quite easy to lay out the design of progressive systems. North Broad Street offered a real problem. The principal difficulty is caused by variable block lengths 300 to 750 feet long and averaging 450 feet. Consequently, there are a number of "tight spots" on the North Broad Street system where we have never been able to get free movement.

One of the problems of the Traffic Engineer's office, while not unique, is the question of complaints made by citizens. During a single month, the office handled 221 complaints, and we have been receiving from 1,500 to 2,000 complaints per year for a number of years. Most of them of course deal with conditions at intersections; many deal with parking conditions. At one time in the early days of the Traffic Engineer's office, every complainant thought the only remedy for bad intersection conditions was a traffic signal. It took several years to wean them away from this idea, and I believe we were one of the first cities to use SLOW and CAUTION signs to a considerable extent to replace the use of totally unjustified traffic signals; at any rate, we have several thousand signs of this type now in use, which give satisfaction to all.

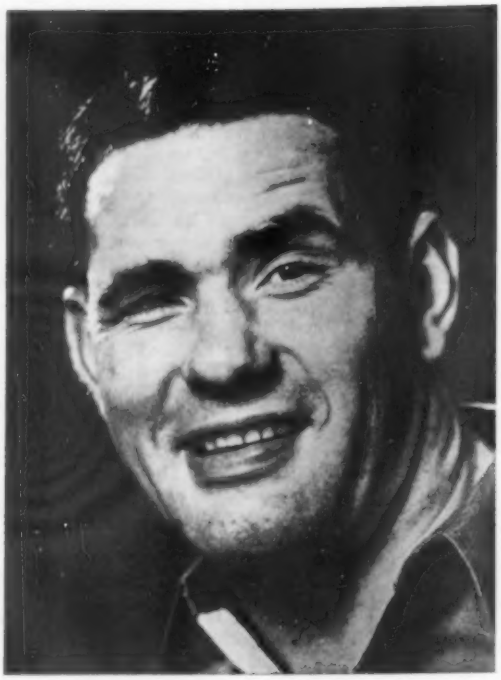
N. Y. State Adopts 3-Color Suspension Lights

THE 3-color or red-amber-green center suspension signal was adopted September 23 by the New York State Traffic Commission as standard for all highways outside municipalities. It is expected that cities and incorporated villages will conform to the state standard on through roads.

The Commission also voted to assume jurisdiction over all highway boulevard stop systems now controlled by local authorities, to remove conflict among towns, counties and other local units. Speed zones for schools will also be established by the Commission when requested by school districts. These will extend 300 feet in either direction from the school and be equipped with signs.

Truck Signals, N. Y. State

ENFORCEMENT of the New York State law requiring motor trucks and buses that need them to be equipped with mechanical signaling devices has been extended from September 1 to January 1, owing to congestion in factories manufacturing these devices.



ALL SIZES 1¼" thru 12"

McWANE 2" PIPE

"That CAST IRON PIPE Idea is OK"

Superintendents . . . engineers . . . the pipe-laying crew all know that 2" Cast Iron Pipe resists corrosion and lasts as long as the larger sizes. Cast Iron Pipe saves cutting expensive pavements . . . has high salvage value . . . stops water losses . . . increases revenues.

McWane 2" Cast Iron Pipe has high tensile and transverse strengths . . . tapping collars . . . factory made joints. Lay McWane 2" 18-ft. lengths and forget replacements.

McWANE PRECALKED JOINT

Here's the famous Precalked Joint that standardized McWane 2" in towns big and little from coast to coast. The Precalked materials are in the bell. Just socket the spigot and calk. Over 20,000,000 feet in use!

McWANE CAST IRON PIPE CO. BIRMINGHAM ALABAMA

PACIFIC STATES CAST IRON PIPE CO. PROVO, UTAH

Chicago, Dallas, Denver, Kansas City, New York, Portland, Ore., Salt Lake City, San Francisco

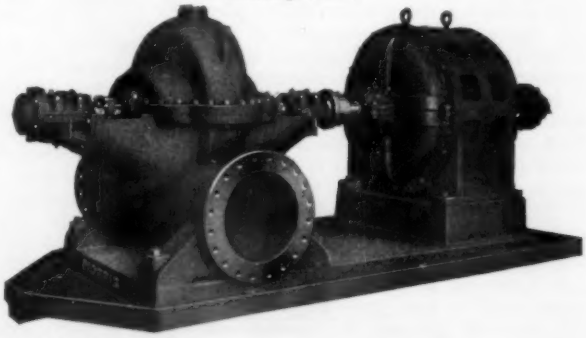
The MORRIS HYDRAULIC COLUMN

News of interest to Centrifugal Pump Users

Face-lifting . . . . .

East St. Louis, Ill., had a nasty blemish on its otherwise attractive countenance. A huge swamp annoyed its worthy citizens for many years. Finally, the city fathers took action. A municipal face-lifting operation was undertaken, consisting of transforming the ugly eyesore into a recreation park with lagoons, bathing beaches, etc., and a Morris Dredge was used for the job. Was it worth while? Ask any East St. Louisan!

There are hundreds of other municipalities which could vastly improve their SA (Scenic or Sanitary Appeal) by a similar "plastic" operation on unsightly swamp lands, shore lines or river fronts. Have you a community sore spot of this kind? If so, let Morris submit recommendations and cost estimate—there's no obligation.



Bright lexicon . . . . .

"In the bright lexicon of youth, there's no such word as fail." The records of Morris installations show that this well-known quotation applies equally well to Morris Centrifugal Pumps. Morris Pumps never fail to meet efficiency guarantees, and they never fail to give long and dependable service with minimum attention and maintenance expense. Be sure to ask for a Morris quotation whenever you are considering the purchase of centrifugal pumps for any service.

For authoritative recommendations on any pumping or dredging problem, address Morris Machine Works, Baldwinsville, N. Y. Representatives in Principal Cities

Improving Municipal Administration

Current Items from the
Public Administration Clearing House

Checking Tax Evasions and Exemptions

WHILE citizens of some states are agitating for further exemptions from property taxes, in other jurisdictions special efforts are being made to reduce exemption privileges and curtail tax evasions. According to the National Association of Assessing Officers, stricter laws on exemptions and careful assessment revaluations are securing for many local governmental units taxes that have long been eluding assessing officers.

At least two states—New York and Tennessee—have tightened up on institutional exemptions. Tennessee's new law specifies that real estate, to be exempt, must be occupied by the institution or its officers while they are carrying out the purpose for which the institution was created. Nashville alone is reported to have added $2,500,000 to the 1936 assessment rolls as a result of the law.

The New York City Board of Tax Commissioners re-examined and put back on the tax rolls over 400 properties held by religious, benevolent, educational and other institutions which had previously claimed exemption. The properties, which included cemeteries, schools, boarding houses, hotels, parsonages and hospitals, added about $100,000,000 in assessable property.

A change in the Pennsylvania personal property tax law seeks to nullify the device of placing intangible personal property in a trust outside the state to avoid taxation. Hitherto it had been rather common practice for people to put their intangible personal property in the hands of a trustee legally domiciled in another jurisdiction which had a lighter tax burden. The new measure specially places a tax on the equitable interest of any resident in any trust, when the trustee is a non-resident. In King County (Seattle), Wash., a revaluation program has resulted in restoring many parcels of property—both real and personal—to the tax rolls. During 29 working days 159 buildings were discovered which had never before been assessed. A standard assessment system is now being installed with the aid of WPA.

Virginia is conducting a long-term statistical study of land-value and assessment trends as a WPA project under the sponsorship of the State Department of Taxation. In addition to revealing omitted and misdescribed property it is expected to show the influence on land values of the extension and improvement of highways, railroads, increases and decreases of population density, industrial developments, public schools, building restrictions, zoning and other factors.

The New York City Department of Taxes and Assessments is having 33 valuation experts make a special study of the property of railroads, telephone and telegraph, electric light and power, and gas companies. A similar study, made last year, increased utility assessments from $541,000,000 to $743,961,325.

Transportation for Traveling Municipal Employees

HOW much should a city employee be paid when he uses his own automobile on city business? *Public Management*, journal of the International City Managers' Association, reports that there is no standard, the reimbursement depending on numerous factors.

Flat-rate allowances are most popular, according to the magazine. The allowance ranges from $10 to $100 and over a month, but the average is probably between $20 and $40. This plan assumes that all allowances cover only the cost of gas and oil. It is easy to administer, but in practice, says the magazine, gross inequalities frequently are found. High ranking officials often are given generous allowances in spite of the fact that they may use a car for only a few hours during the day, while lesser officials and employees who use their cars almost continually receive the same or even lower allowances.

A number of cities use a mileage fee plan, the payment ranging from 5 to 10 cents a mile. In some cases the employee alone reports the mileage. If the employee does not pad, the city can be assured that it pays only for reasonable transportation service. To be effective, however, the report says, this basis of compensation should depend upon daily speedometer or hubometer readings as a basis for compiling cost records for various types of automobile.

Still other cities make various allowances for gas, oil and sometimes repairs. Under such a system, it is commented, employees are bound to use some city gasoline while traveling on private time, and it is not an unknown practice for unscrupulous employees to resell supplies, and to their profit.

The whole system of allowances for private cars is open to a number of criticisms, *Public Management* says. It may save the city capital outlay for automobiles and for garage facilities, it may simplify record-keeping, and it may result in more careful driving of the cars because they belong to the employees themselves, but it seldom is based on scientific cost analysis. As a result, most cities using this plan pay a good deal more than is justifiable for the transportation they receive. It must be remembered also, the magazine points out, that whenever an employee who rents his car to the city leaves the service, another man with a car must be hired. This tends to establish ownership of an automobile as a qualification for holding certain city jobs.

An alternative to both private cars and public cars has been tried in Pittsburgh, Pa., which hires privately owned taxicabs at predetermined rates. A similar system is the use of "Driveurself" cars on a rental basis. Under this plan, as in the Pittsburgh plan, it is necessary for the employee to secure a special voucher or coupon with provision for checking on the length of and justification for the trip. In most cases, however, especially in larger cities, the greatest economy and best service are probably to be obtained by the installation of some central transportation bureau with a dispatching system which will permit the assignment of cars on the basis of need.

"No categorical recommendation can be made for all cities," *Public Management* concludes, "but the choice of the system should be based upon a thorough study of transportation needs and costs. A study of the number of car-miles being paid for by the city at present, unit costs per type of car, and similar factors, will provide the only reliable information upon which this decision can be made."

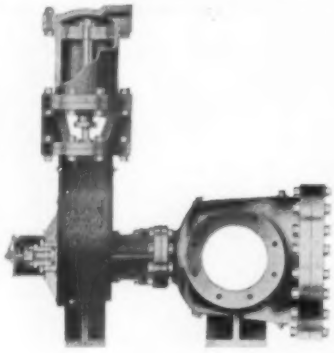
Assistants for City Managers

NO city manager is a profitable municipal investment if he has to be his own clerk or office boy. Economic depressions may multiply his administrative duties and make of him an "iron man," but the continued imposition of petty detail on a trained administrator is pure financial waste. These conclusions are reached by Clarence E. Ridley, Executive Director of the International City Managers' Association, in the current issue of *Public Management*, magazine of the organization.

The "iron-man" manager was necessary in many cities during the depression, Mr. Ridley admits, when retrenchment programs, lay-offs and salary cuts frequently burdened the city manager with extra work. But that time is past, and if a city is to get the greatest return from its investment in a trained manager, "it must relieve him of the burden of petty detail in order that he can plan, direct, and coordinate the city administration."

Mr. Ridley's remedy for this managerial overwork is the provision of assistant city managers, of whom there are now comparatively few, according to a survey made recently by the International City Managers' Association. Only 33 of 98 city managers questioned reported that they had assistant managers, and a number of these assistantships carried the title of secretary only. (See p. 91.)

Smooth, Dependable Control

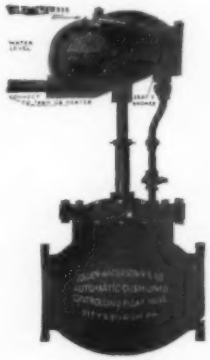


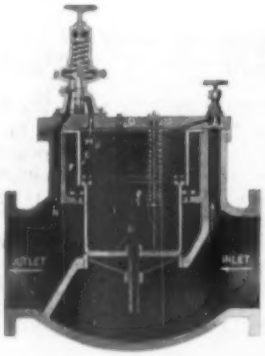
THRU-FLOW CONE VALVE

Afford full pipe line flow without friction loss. Always oil lubricated. Axially unseats before it rotates without friction, rub or wear. Especially desirable for sewage disposal service.

CONTROLLING FLOAT VALVE

Ideal for heaters, vats, tanks, etc. Valve entirely self-contained and operates without water spill. Sensitive in operation and indestructible due to air and water cushioning and heavy bronze mountings. Sizes to 24".



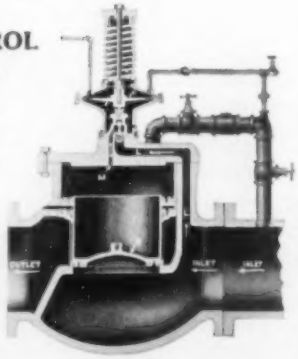


WATER REDUCING VALVE

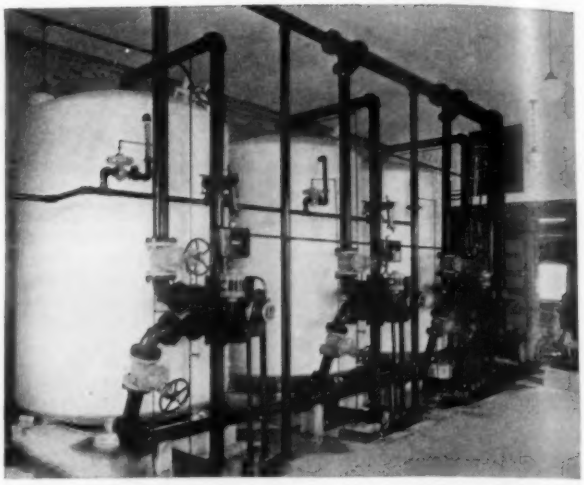
Assures positive control of low pressure. Air and water cushioning prevents shock or hammer. Supplied with single or dual pilot controls for any service. Sizes to 24".

ALTITUDE CONTROL

Assures uniform water level in tanks, standpipes and reservoirs. Suitable for use in single or two-way line service. Heavy internal bronze mounting and air and water cushioning makes valve indestructible. Sizes to 24".



GOLDEN-ANDERSON VALVE SPEC. CO.
1329 FULTON BLDG.
PITTSBURGH PENNA.



Permutit Fully Automatic Zealite Water Softening Equipment in Municipal Plant, City of Somerset, Pa.

Soft Water As You Want It
—*Automatically!*

The Permutit municipal water softening installation at Somerset, Pa., shown above, is set to supply an effluent of 2 grains hardness. The raw water is 10 grains hard and 8 grains of hardness are removed, with all the iron. The same equipment can be readily adjusted to remove only 5 grains of hardness—or any other fraction of the whole.

This flexibility is characteristic of Permutit Zeolite Water Softening plants. And automatic operation assures maximum efficiency with minimum attendance. Municipal executives, engineers, and consultants will find much interesting data applying to current municipal water softening problems and practice in Permutit Municipal Water Softening Bulletins. Write for copies. Address: The Permutit Company, Dept. G-3, 330 West 42nd St., New York, N. Y.

Permutit

Water Conditioning

Of the 33 cities which reported having assistant city managers, 5 are under 10,000 population; 10 are cities of 10,000 to 50,000; and 18 are over 50,000. Two-thirds of the assistant managers have been appointed to their present positions since 1932.

There is considerable variation from city to city in the duties and responsibilities of the position of assistant city manager. In Ames, Iowa, a city of 10,000, he performs duties involving engineering work and general administrative affairs. The assistant manager of Bristol, Va. (9,000), attends to all office details, purchasing, and water department billing. In Charlottesville, Va. (15,000), he devotes most of his time to public works. It is mainly in the larger cities, such as Cincinnati, Dallas and Dayton, that the assistant city manager is in fact and deed an understudy.

Two main advantages accrue from the appointment of real assistant city managers. Not only can the city manager be relieved of some of his routine duties, leaving him free for more important affairs, but the assistant can train himself for a managership through practical experience. City managers should make this contribution to a career system in government, Mr. Ridley believes.

Overcrowded Housing Facilities

ATTEMPTS to regiment his life may make the average American see red, but when his actions contravene public morals, safety, welfare, or health, the properly constituted authority, even in this country, steps in to tell him what he may or may not do.

Though, in this country, housing legislation has not reached that point at which police authority raises a regulatory finger except where tenement house codes exist, it has in certain European countries, notably England. It should be profitable, therefore, says Coleman Woodbury, Executive Director of the National Association of Housing Officials, for interested Americans to study what is going on in England.

In 1935 an Act of Parliament made overcrowding a statutory offense. "Overcrowding" was considered to have been committed when more than the permissible number of persons named in the Act occupied a specified dwelling. The standard set was: 1-room house, 2 persons; 2-room, 3 persons; 3 rooms, 5 persons; 4 rooms, 7½ persons; 5 rooms, 10 persons, with an additional 2 persons for each room in excess of 5. A floor area of a room containing 110 square feet could legally contain 2 persons; and a room containing but 50 square feet could not legally contain even 1 person. Ninety square feet was considered a minimum for 1½ persons; 70 to 90 square feet was legal for 1 person; and 50 to 70 square feet legal for ½-person. A child under 10 years counted as half a person. One under a year was not counted at all. Only those rooms which were habitually used as living or sleeping quarters were counted. This would eliminate kitchens and bathrooms.

In order to find out whether overcrowding existed, the Ministry of Health started a survey. The survey has but recently been completed and some of its findings are now available. Almost 9,000,000 houses were inspected—a number approximately equal to the total number of houses in both England and Wales in 1931. Of this number, it was found that slightly less than 4 per cent were overcrowded according to the standard set in the 1935 Act. The worst sections were found to be parts of London and of the northeast coast. The survey also showed that another 4½ per cent of the population was close to the borderline of overcrowding. The Ministry of Health has decided that for a large part of the country the provisions against overcrowding will become operative January 1, 1937. After that date local governments will be empowered to cause the eviction of enough tenants to bring the occupancy down to the prescribed standards and also to levy fines against landlords who failed to report overcrowded conditions in their dwellings not already known by the local government.

Civil Service on Every Front

ACTION favoring the merit system on every government front—local, state and Federal—is being taken in unprecedented degree, according to the September issue of the *Civil Service Assembly News Letter*, which reports current developments in civil service.

Two Federal agencies not officially under civil service provisions will adopt merit principles in selecting personnel in the near future. Beginning October 1, two-thirds of the employees of the Federal Rural Electrification Administration will come under civil service by noncompetitive examination. Future appointments to the Federal Home Loan Bank Board and its subsidiaries are to be made under the supervision of the Civil Service Commission. This includes the Home Owners' Loan Corporation, with over 15,000 employees.

In Arkansas the Democratic nominee for governor, who is the present attorney-general, has named an honorary commission of three members to survey the operation of the merit system throughout the country and to recommend a law.

In two of these states—Washington and California—voters will make the decision at the polls in November. The Washington bill would blanket under civil service all governmental units. California's proposed act would make civil service mandatory for cities, and would include port, park and school districts. Alabama, Connecticut, Indiana, Michigan, Minnesota and Virginia are the other states in which proposals for civil service laws may be placed before legislatures at their next sessions.

Welfare agencies of five states which do not have state civil service laws have adopted merit systems. They are in Florida, Indiana, Michigan, Oklahoma and Texas.

Approximately 10,000 county employees in Ohio will probably be placed under the state civil service law by a recent decision of the State Supreme Court.

Seven municipalities are reported as considering civil service for one or all departments of government. Duluth, Minn., Portland, Ore., Tulsa, Okla., Tucson, Ariz., Racine, Wis., Royal Oak, Mich., and Wayne County, Mich., are on this list. Wauwatosa, Wis., last month adopted a civil service ordinance which covers nearly all its public employees.

Recent City Manager Appointments

ROY P. BISHOP, former Manager of Salem, Va., but recently Supervising Inspection Engineer for WPA of Virginia, has been appointed first City Manager of Norton, Va., effective September 15.

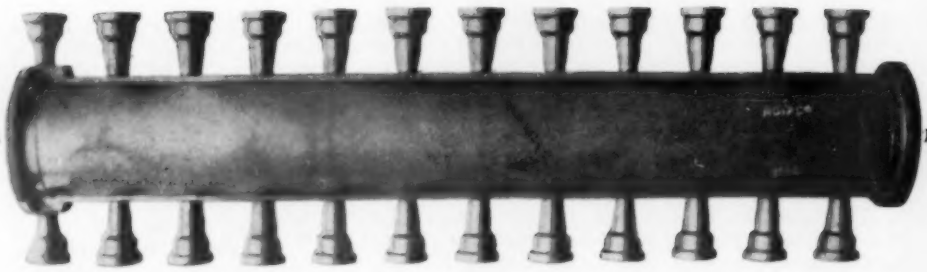
John R. Gwinn, former Manager of Gallipolis, Ohio, was reappointed City Manager of that city on September 5. He succeeds A. R. Henke, who resigned.

C. J. Pratt has succeeded O. O. Johnson as City Manager of Three Rivers, Mich.

John W. Sheedy, a local man, was appointed City Manager of New London, Conn., on September 14. This position has been vacant since last July, when former City Manager William A. Holt resigned.

The Municipal Bond Market

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$300,000	La Crosse, Wis., Sewage-Disposal Plant	1.75	1-10 Ser.	1.70
4,000,000	Minnesota, Trunk Highway	2.25	12-15 Ser.	2.22
420,000	Anderson Co., S. C., Road	2.5	5.5 Avg.	2.38
1,400,000	Louisville, Ky., Bridge Revenue Refunding	3	19	2.88
967,000	Los Angeles Co., Calif., Flood Control District	1.25	10 Avg.	2.91
125,000	Mineola, N. Y., Water	2.4	11.66 Avg.	2.36
100,000	Issaquena Co., Miss., Rehabilitation	4	1-20 Ser.	3.94
193,000	Middlesex Co., N. J., Hospital	4	22 Avg.	3.23
166,000	Toledo, Ohio, University of Toledo	4	11.66 Avg.	4.22
485,000	University Heights, Ohio, Refunding	4	1-8.5 Op.-Av.	4
555,000	Shawnee, Okla., Water Works	4	12.66 Avg.	4.14



THIS MANIFOLD FOR BACHMAN FILTRATION PLANT, DALLAS, TEXAS, was cast in the Special Foundry Division of the American Cast Iron Pipe Co., Birmingham, Ala. It is a splendid example of the special foundry products furnished by "Acipco" in addition to their regular line of "Mono-Cast" Centrifugal Pipe and high-quality cast iron fittings in sizes up to and including 36 inches.

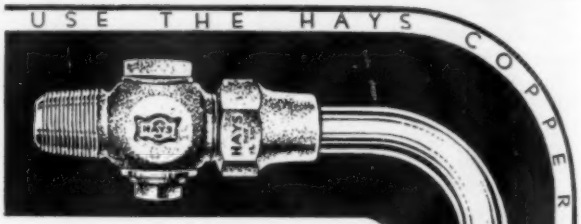
THE WILLIAM S. HEWETT SYSTEM
of reinforced construction
gives you a structure that WILL NOT CRACK.

Write for Bulletin A, showing various designs of tanks, reservoirs and standpipes; and Bulletin B, explaining the theories on which the system is based.

The William S. Hewett System
549 W. Washington St.
Chicago, Ill.

Below: Water Tank, 3,000,000-Gal. Capacity at Colton, Calif. Currie Engineering Co., Engineers, San Bernardino, Calif.

USE THE HAYS COPPER SERVICE METHOD



A Hundred Years is a long time Mister!

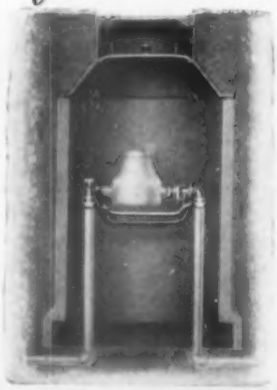
A progressive Western Water Department has replaced nearly 8,000 out of 16,000 Main to Curb Connections with copper pipe. They say, "Copper, we are convinced, will give satisfactory service for a century and that is why we are using copper exclusively for all replacements. To date we have had not a single failure."

Investigate the use of the Hays Copper Service Method in your community, if you like long-term profitable investments. Write for complete information today.

Hays Mfg. Co., Erie, Pa.

HAYS
PLUMBING BRASS
BATH FIXTURES
COPPER PLUMBING
GAS SERVICE GOODS
WATER SERVICE GOODS
IRON PRODUCTS
TAPPING MACHINES

COLD CLIMATE SETTINGS *for* WATER METERS



Ford Yokes and Double-lid Meter Box Covers make an ideal combination for meter pits in cold climates.

The proper selection and installation of this equipment insure safety for your water meters.

Write for catalog.

WATER METER QUALITY EQUIPMENT

FORD METER BOX CO.
SETTING *and* TESTING EQUIPMENT *for* WATER METERS
WABASH, IND., U.S.A.

CENTRIFUGAL PUMPS
Rotary Jet Condensers and Vacuum Pumps; Evaporators, single and Multiple effect

Manistee single-stage double-suction pumps, 75-20,000 g.p.m. capacity

Manistee multi-stage pumps, 50-3500 g.p.m. capacity with heads up to 1600 feet

Write for Bulletins

MANISTEE IRON WORKS CO.
MANISTEE MICHIGAN

The Highway as a Part of the Landscape

"ROADSIDE improvement is not a trimming—on the contrary it is an integral part of the construction of the highway. It does not seek to standardize our highways with artificial planting. It seeks to restore the natural beauty of the old road." These are the words of Elizabeth B. Lawton in a recent issue of *The Roadside Bulletin*, published by the National Roadside Council, by whose courtesy the illustrations on this page (photographs by W. L. Lawton) are used, together with further abstracts from this important discussion of "Fitting the Highway into the Landscape."

The location of the road should be chosen to take advantage of scenic beauty. More essential for a beautiful highway than any planting is a wide right-of-way, adequate for proper highway design. Sufficient room must be provided to push the poles back and plant trees between poles and pavement; to make the ditches broad and shallow where ditches are necessary, and to widen the pavement in the future, if needed. Small additional right-of-way areas should be planned at the start to secure strategic points for roadside rests, for the saving of some roadside grove, or historic spot, and for the provision of look-outs at scenic points.

Eliminating a curve by cutting back into the hill for a straight alignment is not the only means of promoting safety at that point. Widening the pavement and separating traffic around the curve is a surer and more sightly method.

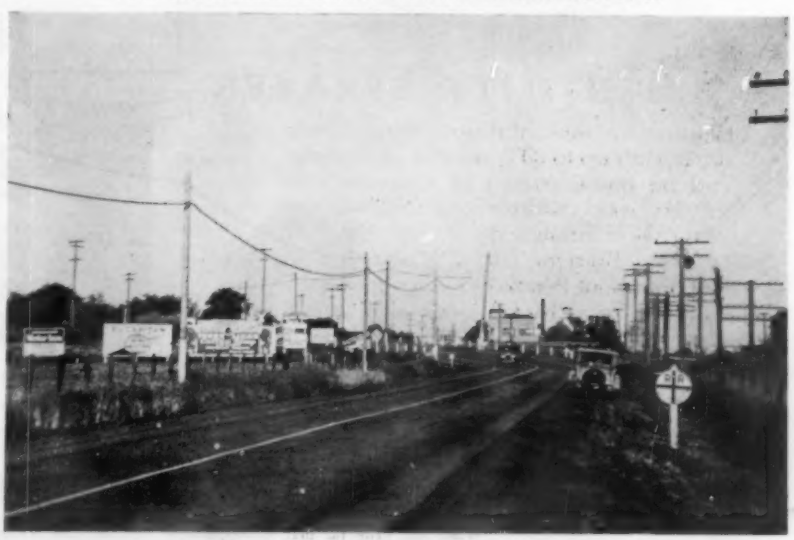
No one step so quickly blends the road with the landscape as does a natural sloping of all earthwork. Steep slopes with sharp outlines are mechanical and ugly. Flat slopes with rounded contours, especially when covered with green, are the foundation of a beautiful highway. A certain amount of planting is always needed to heal the scars of construction, particularly the slopes of cuts and fills. Plant material should be selected which would grow naturally in the adjoining fields.

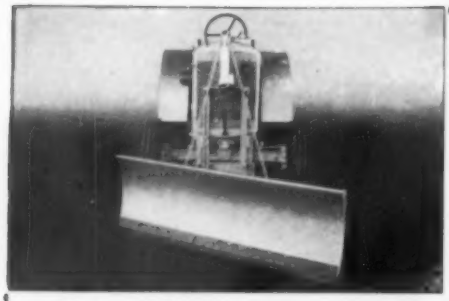
The unrestricted use of the roadsides for poles, signs, billboards, shoestring slums of commercial enterprises and auto dumps not only destroys all possibility of beauty but seriously reduces the efficiency of the road and menaces the safety of travel. The ideal solution is the parkway, where, either by public ownership or by zoning, the roadsides are fully protected from encroaching commercialism. Unfortunately, parkway construction is too costly for general use on cross-country arteries. Here we must rely on county zoning, or some form of state control yet to be established, to protect for the people the full recreation and transportation values of our tremendous highway investment.

TO FIT THE HIGHWAY INTO THE LANDSCAPE WE MUST FOLLOW THE NATURAL CONTOURS OF THE LAND WHEREVER POSSIBLE

THE OLD ROAD WAS A PART OF THE LANDSCAPE . . . .

. . . . THE MODERN HIGHWAY IS AN UGLY SCAR ACROSS IT





The Meyer

Sidewalk Snow Plow

Clears walks quickly and economically. Can be easily attached to narrow tread tractors, wheel or crawler type. Patented Meyer Safety Blade plows a clean, straight path and does not damage uneven pavements, water shut-offs, etc.—rides safely over ordinary obstructions.
Quick-reversible Blades, 50" to 78" with or without hydraulic lift—$95 to $175 f.o.b., factory.
Does More and Better Work for Less Money.

Write for Circulars

MEYER PRODUCTS
13929 EUCLID AVENUE
CLEVELAND OHIO

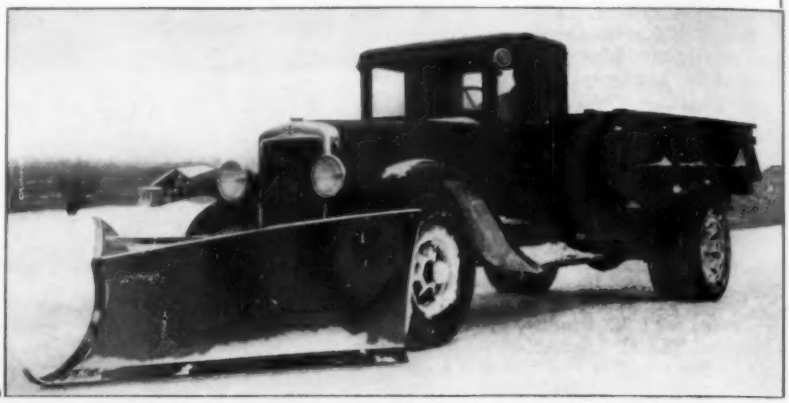
MEYER SNOW PLOWS

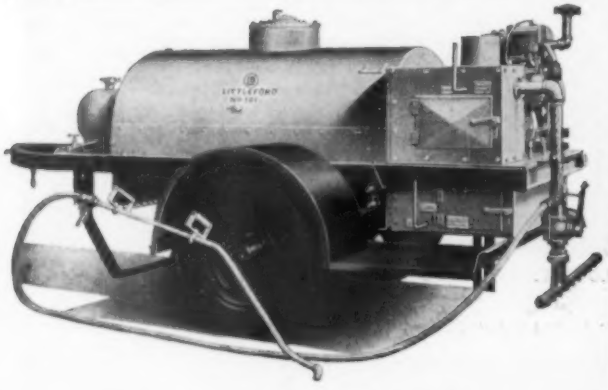
Safety Blade and V-type Models for 1½-Ton Trucks and Tractors Provide Efficient Snow-Removal Service at Very Low Cost

Model V-10 (illustrated) with tapered moldboards 24" to 34" high, clears a 7'3" path. Quickly attached to any light truck or tractor—can be furnished with or without hydraulic lift, cab control.

Quick-reversible Blade Models equipped with patented Meyer Safety Blade are available with 8' and 9' moldboards, 20" to 30" high and hydraulic lift, cab control.

Prices—$135.00 to $185.00 f.o.b. factory





No. 101 UTILITY SPRAYER

Contractors and highway departments are saving up to 30% on cost of material and an equal saving in time on bituminous road surface maintenance by using bulk material in the No. 101 Littleford Sprayer. It will pay you to find out about this big time maintenance outfit for handling all kinds of bitumen.

LITTLEFORD
Road Maintenance Equipment
SINCE 1900
LITTLEFORD BROS., 500 E. Pearl St., Cincinnati, O

SIMPLEX
VENTURI TYPE
METERS

ACCURATE - RELIABLE - SIMPLE
EASY TO CHECK AND ADJUST

Write for Bulletins

SIMPLEX VALVE & METER CO.
6743 Upland Street, Philadelphia, Pa.

Manufacturers of Meters and Controllers of Venturi Type; Gauges; Air and Vacuum Valves; Air Release Valves; and other Water-Works Devices.

QUINN
PIPE FORMS
HAND or WET PROCESS

Make concrete pipe on the job with Quinn Concrete Pipe Forms. Get complete information on prices and special construction features of Quinn Forms. Give us size of job for estimate on your pipe form needs.

HEAVY DUTY | **MEDIUM DUTY**

Built for more years of service—sizes for any diameter pipe from 12 to 84 inches—any length—tongue and groove or bell end.
Makes same size pipe as "Heavy Duty" but built to meet demand for lower cost equipment to produce uniform quality in smaller amounts.
Also manufacturers of concrete pipe machines for making pipe by machine process.

QUINN WIRE & IRON WORKS 1623 12 St. Boone, Iowa

Recreation Service Costs Compared

A MARKED variation in per capita costs for recreation service, ranging from 2 cents to $2.83 for the year 1934, is shown in a report on the costs of recreation service of the 94 cities having a population of over 100,000, released September 3 by Director William L. Austin, Bureau of the Census, Department of Commerce.

The per capitas for 1934 are based on the estimated population as of July 1, 1933, no later estimates having been made, except for Washington, D. C., estimated as of January 1, 1934. These statistics cover the government of the city corporation proper and also independent districts practically coextensive with the cities. They also include a percentage of the financial transactions of the county government for cities having over 300,000 population, in order that data for such cities may be comparable with those of other cities in this class in which the ordinary county functions are performed by the city governments.

Included in expenses of recreation service are payments for maintenance and operation of such educational facilities as museums, art galleries, conservatories, and zoological collections; payments for general recreational facilities, including swimming pools, bathing beaches, golf links, playgrounds, and music for popular entertainment; and payments incident to maintenance of parks, including roadways, bridle paths, lighting, and policing. Classification of expenditures is based on functional activities and not on fund or budgetary appropriations.

PAYMENTS FOR OPERATION AND MAINTENANCE OF RECREATION SERVICE COMPARED WITH PAYMENTS FOR OPERATION AND MAINTENANCE OF ALL GENERAL DEPARTMENTS—1934

City	Total	Per Capita	Per Cent of All General Departments
GRAND TOTAL	$48,306,238	$1.29	2.8
Group I	32,866,254	1.49	2.7
Group II	5,526,786	1.20	2.7
Group III	9,913,198	.91	2.9
GROUP I—CITIES OF 500,000 AND OVER			
New York, N. Y.	9,476,400	1.32	1.9
Chicago, Ill.	6,053,772	1.73	4.8
Philadelphia, Pa.	2,325,011	1.18	3.0
Detroit, Mich.	1,241,056	.74	1.7
Los Angeles, Calif.	1,773,275	1.31	2.4
Cleveland, Ohio	450,893	.49	1.1
St. Louis, Mo.	1,216,276	1.46	3.9
Baltimore, Md.	799,085	.98	2.3
Boston, Mass.	2,126,470	2.70	3.6
Pittsburgh, Pa.	970,399	1.43	2.9
San Francisco, Calif.	1,747,997	2.66	5.2
Milwaukee, Wis.	1,675,426	2.80	4.6
Buffalo, N. Y.	1,653,259	2.83	3.9
Washington, D. C.	1,356,925	2.74	3.9
GROUP II—CITIES OF 300,000 TO 500,000			
Minneapolis, Minn.	1,122,005	2.35	4.7
New Orleans, La.	270,562	.57	2.3
Cincinnati, Ohio	360,681	.78	1.5
Newark, N. J.	546,099	1.22	2.0
Kansas City, Mo.	345,985	1.32	4.0
Seattle, Wash.	373,963	1.00	2.5
Indianapolis, Ind.	390,075	1.05	3.1
Rochester, N. Y.	751,753	2.25	3.0
Jersey City, N. J.	514,279	1.61	2.5
Houston, Texas	123,799	.39	1.7
Louisville, Ky.	296,339	.93	2.9
Portland, Ore.	231,246	.75	2.1
GROUP III—CITIES OF 100,000 TO 300,000			
Columbus, Ohio	70,326	0.23	0.9
Toledo, Ohio	110,119	.37	1.4
Oakland, Calif.	455,607	1.54	4.9
Denver, Colo.	553,550	1.89	4.5
Atlanta, Ga.	176,243	.63	2.4
Dallas, Texas	227,179	.82	4.2
St. Paul, Minn.	241,748	.87	3.2
Birmingham, Ala.	149,565	.55	3.6
Akron, Ohio	6,165	.02	.1
Memphis, Tenn.	236,890	.91	4.8
Providence, R. I.	425,713	1.67	3.8
San Antonio, Texas	117,422	.48	3.4
Omaha, Nebr.	74,497	.34	1.4
Syracuse, N. Y.	314,423	1.47	2.7
Dayton, Ohio	120,299	.58	2.4
Oklahoma City, Okla.	65,750	.33	1.8
Worcester, Mass.	176,519	.89	1.6
Richmond, Va.	117,296	.63	2.1
Youngstown, Ohio	208,019	1.19	3.8
Grand Rapids, Mich.	122,633	.71	2.5
Fort Worth, Texas	181,072	1.07	4.8
Hartford, Conn.	337,406	2.00	3.8
Flint, Mich.	84,268	.50	1.7
New Haven, Conn.	231,639	1.42	3.1
San Diego, Calif.	276,710	1.73	6.2
Long Beach, Calif.	373,758	2.38	6.8
Nashville, Tenn.	144,384	.92	4.3
Springfield, Mass.	318,563	2.08	3.6
Tulsa, Okla.	90,192	.61	3.1
Bridgeport, Conn.	180,501	1.23	2.3
Des Moines, Iowa	74,949	.52	1.8
Scranton, Pa.	123,046	.85	2.7
Salt Lake City, Utah	176,979	1.23	4.5
Yonkers, N. Y.	203,223	1.45	2.2
Paterson, N. J.	53,914	.39	.9
Jacksonville, Fla.	193,845	1.40	5.4
Albany, N. Y.	290,951	2.24	4.2
Norfolk, Va.	86,613	.67	2.3
Trenton, N. J.	91,751	.74	2.0
Chattanooga, Tenn.	39,290	.32	1.7
Kansas City, Kans.	45,290	.37	2.1
Fort Wayne, Ind.	61,790	.51	2.6
Camden, N. J.	42,672	.36	1.2
Erie, Pa.	64,413	.54	2.2
Elizabeth, N. J.	55,222	.47	1.3
Wichita, Kans.	106,840	.91	3.9
Spokane, Wash.	104,326	.89	3.9
Fall River, Mass.	42,220	.37	1.1
Cambridge, Mass.	173,033	1.51	3.0
New Bedford, Mass.	63,435	.56	1.5
Reading, Pa.	144,860	1.30	4.8
Knoxville, Tenn.	14,004	.13	.6
Peoria, Ill.	154,091	1.40	5.6
South Bend, Ind.	61,451	.56	2.7
Tacoma, Wash.	105,220	.97	3.7
Miami, Fla.	132,170	1.22	4.2
Gary, Ind.	85,685	.79	3.5
Canton, Ohio	33,852	.31	1.3
Wilmington, Del.	89,540	.84	3.0
Tampa, Fla.	47,695	.45	2.0
Somerville, Mass.	105,393	1.00	2.4
El Paso, Texas	56,183	.53	3.7
Evansville, Ind.	87,913	.84	4.1
Lynn, Mass.	139,955	1.55	3.4
Utica, N. Y.	79,443	.77	1.6
Duluth, Minn.	100,380	.99	3.2
Waterbury, Conn.	135,591	1.34	2.9
Lowell, Mass.	37,514	.37	.9

Legal Status of Parking Meters

IN summary, the two vital problems which must be settled in passing upon the validity of coin-operated parking meters are: first, whether or not they interfere with the "free use of the streets" within the meaning of various state statutes; and, second, whether the five-cent parking fee can be justified under the municipal police power. Such minor legal objections as "discrimination" because certain parking meter ordinances refer only to motor vehicles, or non-conformity of the instalment payment plan with finance legislation in some localities, are not inherent in the parking meter plan and may be dismissed with only a brief mention.

On the whole, the weight of authority appears to favor the opinion that "free use of the streets" refers primarily to freedom of public travel and passage, and that the privilege of parking may be restricted by a municipality for the public safety and welfare. Furthermore, it is generally agreed that most cities may use mechanical aids in detecting overparking, and may charge parkers a fee for the privilege sufficient to cover the reasonable costs of regulation and inspection.

The attempts to justify the present type of parking meters under the local police power have not met with such universal agreement, however. Opponents have looked skeptically at the gadgets as revenue-producers in disguise, owing to the surprisingly large income they produce and to the fact that meter manufacturers have played upon the cities' desire for revenue as an inducement to install the devices. It has also been apparent that cities have used the added income for purposes quite far removed from parking control, thus raising the suspicion that the meters bring in revenues far in excess of those needed for regulatory and inspection costs. Since cities are almost invariably forbidden to use police power fees for the purpose of raising revenue, this aspect of the parking meters would be sufficient to make them illegal, if it could be proved that income from the devices far exceeds reasonable regulatory costs.

The defense of those who favor the meters, however, is that the "hidden" costs of municipal parking control exceed even the large sums of money brought in by the meters. According to this point of view, the five-cent meters are not really revenue-producers, and can be justified under the police power. The present question is whether such a doctrine will be sustained by the appellate courts, in view of the fact that revenues are actually being used for many purposes distinct from parking regulation. The fact that cities seem to find it impossible to earmark all the meter revenues for parking regulation would seem to indicate that the income from the meters is far beyond what is necessary to meet the city's outlay for all aspects of parking control.

The authorization of parking meters for revenue purposes would seem to be a proper subject for state legislation, so that, should the courts in some jurisdictions hold against the police power theory, remedial legislation might fairly be sought.

—Summary of Report No. 12 dealing with the legal phases of parking meters, prepared by the Institute of Municipal Law Officers in cooperation with the United States Conference of Mayors. It is the second report on this subject, the Conference of Mayors having distributed a report describing the operation of parking meters in various cities throughout the country in August of this year.

L.F.C.

HIGHEST QUALITY CASTINGS *PLUS*

60x42x42

QUICK DELIVERIES

—spell economy on any job!—For more than 50 years "Lynchburg" has been famed for it's high quality castings, and it's unusually quick deliveries—Many so-called "Specials" in other foundries are every day routine at "Lynchburg."—"Lynchburg Service" insures you against expensive delays.

Bell and Spigot Pipe and Fittings From 4" to 54"
Cast Iron Flanged Pipe From 3" to 84"
Cast Iron Flanged Fittings and Flanges from 1" to 84"
de Lavaud Centrifugal Cast-Iron Pipe

LYNCHBURG FOUNDRY COMPANY

General Office, LYNCHBURG, VA.

Peoples Gas Bldg., Chicago, Ill. — **50 Broad St. New York, N. Y.**

PARSONS *Snow Plows*

Embody latest scientific formation for streamline movement of snow. Greater speed, less power consumed, more snow moved. Built in four sizes and styles for large or small trucks.

— One-Way Plows
— Vee plows
— Wings

Hand, hydraulic or power hydraulic controls. There is a Parsons Representative near you.

Write —

THE PARSONS COMPANY

NEWTON *(Mention The American City)* **IOWA**

The safety of your city

depends on fire alarm, police and traffic signals.

You must have cables that can carry you through an emergency, a time when cable failure might add to confusion or disaster. That means not only protection from mechanical injury and careful installation to prevent malicious or accidental interference with service but permanent, high-grade, moisture-resisting insulation.

You need Simplex-LATOX lead covered Cables, made to meet your special requirements. They will be a valuable addition to your fire and police protection.

Complete information, including illustrations, comparisons, tests and specifications may be obtained by sending for booklet "Simplex-LATOX Lead Covered Cables."

SIMPLEX WIRE & CABLE CO.

79 Sidney St., Cambridge A, BOSTON, MASS.

Prepared by
FRANK B. WILLIAMS
Author of "The Law of
City Planning and Zoning"

Zoning and Planning Notes

From Data collected
by the Zoning Committee
of New York
(233 Broadway)

Residential District—Office-Sign

MASSACHUSETTS.—*Town of Lexington v. Govenar*, 3 N. E. 2d, 19 (Supreme Court, July 2, 1936).—The town of Lexington adopted a zoning ordinance excluding from residential districts offices and office-signs. The defendant Govenar is a lawyer, with an office in Boston, and a residence in a residential district in Lexington. On his residence he maintains a sign announcing himself to be an attorney at law and notary public. The defendant maintained no real office at his home, but saw at his residence such clients as desired to consult him there, putting up the sign for advertising purposes and to solicit the patronage of clients.

And the Court holds that, while the defendant might legally consult with his clients at his residence, he had no right to maintain the sign.

Open-Air Parking

MISSOURI.—*Rhodes v. Moll Grocery Co.*, 95 S. W. 2d, 837 (St. Louis Court of Appeals, July 7, 1936).—The defendant grocery company maintained an automobile parking lot for its customers adjacent to plaintiff's residence. No charge was made for the parking. It was found as a fact by the Court that this use of the land in question created large quantities of dirt, dust, fumes; made much noise; and thereby greatly interfered with the residential use of plaintiff's property, and depreciated its value. For this reason the defendants were enjoined from using the property in this way because it created a nuisance.

EDITOR'S NOTE.—The reader should note that this case does not hold open-air parking to be necessarily a nuisance, but only that it was such in this case.

For other phases of this subject, see the reference to it in the report of the Zoning Round Table at the Planning Conference at Richmond, in our Notes for June, 1936, with its references.

Junk Shop

NEW JERSEY.—*Rescininti v. Board of Commissioners of Town of Belleville*, 186 Atl. 439 (Supreme Court, July 22, 1936).—Rescininti is seeking a permit to conduct a junk shop, which the town denies him by virtue of an ordinance which provides that the applicant must show, to the satisfaction of the Commissioner, that the location of the junk shop is such that the public health will not be injuriously affected thereby.

The Court held the applicant entitled to his permit. The junk business is not in law a public utility "affected by a public interest" or "devoted to a public use." A gas station has been held not to be a fire hazard so that its prohibition would promote the public health, safety, morals or general welfare; and the same is true of the junk business. It is beyond the power of the municipality to interfere arbitrarily with private business by imposing unreasonable restrictions upon it.

In any event the municipality cannot use a discretionary power arbitrarily. The location is not contrary to the zoning ordinance, being a non-conforming use. For almost 13 years the applicant has maintained his shop in this location. The permit should be granted him.

Filling Station

NEW JERSEY.—*Meslar v. Township Committee of Denville Township*, 186 Atl. 55 (Supreme Court, July 11, 1936).—Meslar filed a written application for permission to erect a gasoline filling station on a plot of land within the township, which was denied. And this Court holds the refusal to grant it to be illegal.

The municipal authorities had been given no authority over the number or location of filling stations. The zoning ordinance does not require the consent of the building inspector to such stations in the zone in which the lot in question is located. It is well settled that filling stations do not involve such an increase of the fire hazard as to justify the refusal. The township claims that it has discretion in the issuance of such permits, which was not abused. This claim under these circumstances is overruled by the Court.

Land Under Water—Right of Upland Owner of Access to Navigable Water

NEW YORK.—*Del Balzo Holding Corporation v. McKenzie, Commissioner of Docks*, 3 N. E. 2d, 438 (Court of Appeals, July 8, 1936).—The upland owner has the right of access to navigable water, and for that purpose may build a pier out to it over land under water, owned by the city of New York. The regulating power of the city does not include the right to exact rent for this privilege.

Eminent Domain—Waterfront Property

NEW YORK.—*Matter of Acquiring Land within Bulkhead Lines of Flushing River*, Supreme Court, Queens County, reported in *New York Law Journal*, July 7, 1936, p. 61.—In a condemnation proceeding by the city of New York to acquire title to waterfront property for the purpose of conveying it to the United States Government in furtherance of a plan for the advancement of commerce, the city may not, in fixing the valuation for the parcels taken, treat the parcels as being depreciated 50 per cent in market value on the theory that they were subject to regulating and supervisory powers which the municipal dock department had over waterfront properties by virtue of the city charter. It is not to be presumed that the power may be exercised in an unreasonable or arbitrary manner.

Thus, in recognizing the right of the city to improve the waterfront for the benefit of navigation free from any interference by the owner of the riparian land, the Court says in *Sage v. the Mayor* (154 N. Y. 61):

> "While such are the strict powers of the city, in practice it has used them with that forbearance and moderation that is naturally expected of government, whether state or local, acting for the benefit of all the inhabitants. . . . It may be safely assumed that no public authority will make an extreme or oppressive use of its rights or unnecessarily inflict injury upon a citizen."

If the city's claim is sound, it might as well be argued that the value of all property in the city should be depreciated to some extent because of the regulatory powers vested in other city departments, such as the Building Department, the Department of Health, or the Tenement House Department.

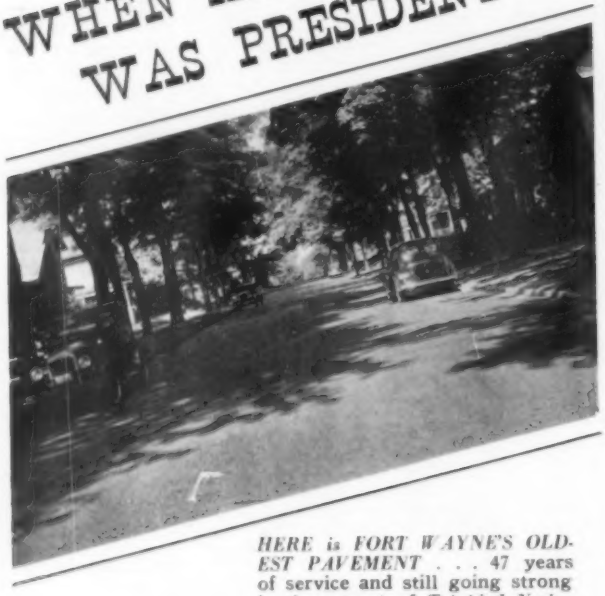
Private Restriction—Unopened Street

PENNSYLVANIA.—*Philadelphia Storage Battery Co. v. City of Philadelphia*, 186 Atl. 103 (Supreme Court, June 26, 1936).—The conveyance by the private owner of land bounded by an unopened street, projected by the municipality, gives by implication an easement over the bed of the street to the grantee of the land. Grantor therefore has no marketable title to the land in the bed of the street, suffered no damage when the city opened the street, and therefore can recover none in the proceedings taken to condemn the land.

Planning Legislation in New England

Under date of April, 1936, the National Resources Committee has issued an analysis, with texts, of the state planning acts, and the municipal planning and zoning laws, of the New England States, prepared by the New England Regional Planning Commission, 2100 Federal Building, Boston, Mass. The book is a valuable addition to the working library of those engaged in any branch of planning work.

This TRINIDAD Street was laid WHEN HARRISON WAS PRESIDENT



HERE is FORT WAYNE'S OLDEST PAVEMENT . . . 47 years of service and still going strong is the record of *Trinidad Native Lake Asphalt* on Wayne Street, Fort Wayne, Ind., laid in 1889 in the horse-and-buggy days of President Benjamin Harrison.

There is only one way to judge the value of an asphalt pavement—its record of service under traffic and under various climatic conditions. You know that ductility and adhesiveness are related properties, and if the pavement is to last the bitumen must be of such a character as to stand the weather and traffic without hardening and cracking.

The Fort Wayne pavement above was built for days when high speed motor traffic was unknown, unexpected, and is proof that Trinidad pavements are built to endure.

Incidentally, *Trinidad Native Lake Asphalt* will cover your present old concrete, brick, granite or block pavements, giving you a *new* street for the price of an asphaltic top.

THE BARBER ASPHALT COMPANY

New York Philadelphia Chicago St. Louis

TRINIDAD
NATIVE LAKE
ASPHALT

FOR HARD DIGGING IN THE HEAVY SNOW BELT

. . . you need the pick-like action of the Haiss revolving feeding-propellers to break up icy snow piles.

. . . you need the crawler traction of the Haiss machine, the toothed digging-type flights, and its 7-yard-a-minute capacity. A high-powered machine.

Let Us Send You Details and Price

GEORGE HAISS MFG. COMPANY — HAISS — 140th Street and Park Avenue, New York

Save on Trenching Costs with a Giant Pipe Pusher

Giant Pipe Pusher

This remarkable machine will lay pipe or conduit up to 15 in. in diameter, for less cost than other methods that can be employed. Compact . . . easily handled . . . powerful . . . very rapid in operation . . . economical in cost.

Write today for information on this profitable tool.

GIANT MANUFACTURING CO. Dept. P Council Bluffs, Iowa

KILL POISON IVY NOW NOW NOW

FALL, when the sap runs down: best time to eradicate poison ivy. With Dolge Weed-Killer. Dilute and sprinkle: chemical is drawn into the roots and runners, killing the stubborn growth. Dolge GUARANTEES this method when simple directions are followed. Please write.

THE C. B. DOLGE COMPANY . . . . . WESTPORT, CONNECTICUT

When you write for that catalog, kindly mention THE AMERICAN CITY

The City's Legal Rights and Duties

Conducted by A. L. H. STREET, Attorney at Law

Accidents

Complaint held to state cause of action against city for injury to woman who fell on slippery steps leading to rest room in city hall basement (South Dakota Supreme Court: *Ring v. City of Mitchell*, 263 N. W. 893).

City held not liable for automobile accident due to car skidding on rails of unused street railroad track in street (New York Court of Appeals: *Green v. City of Mechanicsville*, 199 N. E. 26).

Statutory notice of place of sidewalk accident varying 32 street numbers from actual place held insufficient (Indiana Appellate Court: *Atkinson v. City of Indianapolis*, 199 N. E. 157).

Airports

Charter prohibition against municipality engaging in "commercial or industrial enterprise" held not to preclude maintenance of municipal airport (California Supreme Court: *Krenwinkle v. City of Los Angeles*, 51 Pac. 2d, 1098).

Bankruptcy

City's claim aaginst bankrupt trust company held preferred under Federal bankruptcy act (United States Supreme Court: *City of Lincoln, Nebr., v. Ricketts.* 56 Sup. Ct. 507).

Bond Issues

Municipal bondholder held to have no such vested rights as to preclude detachment of territory from the municipality and consequent immunity of the detached lands from further taxation under statute existing when bonds were issued (Nebraska Supreme Court: *Hardin v. Pavlat*, 266 N. W. 637).

City held to have been liable to special assessment bondholders for neglect to enforce assessments, but action by bondholder held barred by limitations (Kentucky Court of Appeals: *City of Catlettsburg v. Trapp*, 87 S. W. 2d, 621).

Business Regulations

Ordinance fixing closing hours for barber shops upheld as valid exercise of police power (Ohio Supreme Court: *Wilson v. City of Zanesville*, 199 N. E. 187). Similar ordinance held void (Colorado Supreme Court: *City and County of Denver v. Schmid*, 52 Pac. 2d, 388).

Contracts

Mayor and councilmen held not disqualified to vote to vacate street for railroad use through being stockholders or employees of railroad company, which agreed to open new street, etc. (New Jersey Court of Errors and Appeals: *Downs v. Mayor and Common Council of City of South Amboy*, 185 Atl. 15).

Outgoing board of commissioners held not entitled to contract for audit of city's books to be made and paid for after expiration of such commissioners' term of office, unless so authorized by charter (Oregon Supreme Court: *Miles v. City of Baker*, 51 Pac. 2d, 1047).

Contract hiring attorney held invalid as creating debt not payable out of current revenues and not provided for by simultaneous tax levy (Texas Court of Civil Appeals: *Stevenson v. Blake*, 88 S. W. 2d, 773).

Depositaries

Trust company pledge of securities to secure city deposits held invalid, but city held entitled to return of deposit or to credit proceeds of securities against same, and compromise agreement was upheld (New York Court of Appeals: *City of Mt. Vernon v. Mount Vernon Trust Co.*, 1 N. E. 2d. 825.)

Food Regulations

Ordinance forbidding delivery of bakery goods between 6 p. m. and 6:30 a. m. held invalid (California Supreme Court: *Skaggs v. City of Oakland*, 57 Pac. 2d, 478).

Licenses

Filling stations held validly classified according to tank capacity for tax purposes (Georgia Court of Appeals: *Wright v. City of Atlanta*, 177 S. E. 753).

Payment of business and motor-vehicle license taxes held not to preclude imposition of additional tax for vehicular use of streets (Georgia Supreme Court: *Derst Baking Co. v. Mayor and Aldermen of City of Savannah*, 179 S. E. 763).

Ordinance imposing a higher tax against cash-and-carry grocers than against others held void (Georgia Supreme Court: *City of Douglas v. South Georgia Grocery Co.*, 179 S. E. 768).

License tax on taxicab companies plus tax on each taxicab held not invalid as double taxation (Florida Supreme Court: *State v. Milburn*, 158 So. 884).

Farmer selling surplus meat products held not subject to license tax as engaged in "business" (Kentucky Court of Appeals: *Karnes v. City of Benton*, 80 S. W. 2d, 558).

Markets

Holder of market stall license renewable annually held to have no vested right to occupancy beyond each license term and no right to alter structures (Maryland Court of Appeals: *Mayor and City Council of Baltimore v. Ercolano*, 184 Atl. 164).

Municipal Utilities

General charter town held empowered to operate public utilities outside corporate limits and within another municipality (Arizona Supreme Court: *Crandall v. Town of Safford*, 56 Pac. 2d, 660).

Water bonds held properly made payable from net, not gross, revenues (Arizona Supreme Court: *Crandall v. Town of Safford*, 56 Pac. 2d, 660. See, also, *Guthrie v. City of Mesa*, 56 Pac. 2d, 655).

Taxpayer and electricity consumer held without standing to enjoin acquisition of light plant to be paid for out of its revenues (Texas Court of Civil Appeals: *Hazelwood v. City of Cooper*, 87 S. W. 2d, 776, and *Jenkins v. City of Cooper*, 87 S. W. 2d, 778).

Ordinances

An ordinance prescribing no penalty for its violation held unenforceable (Utah Supreme Court: *Roe v. Lundstrom*, 57 Pac. 2d, 1128).

Public Utilities

Street railroad's right to maintain track in street held to continue until revoked despite cessation of operation (New York Court of Appeals: *Green v. City of Mechanicsville*, 199 N. E. 26).

Gas company's suit to enjoin city from enforcing charge for use of streets held improperly dismissed, although franchise may have expired and city could have compelled company to vacate; company being entitled to a hearing on the reasonableness of the charge made by the city in permitting continued use of streets (Texas Court of Civil Appeals: *Municipal Gas Co. v. City of Wichita Falls*, 88 S. W. 2d, 608).

Sewage Disposal

Statutes held to empower city to become indebted to provide a sewage disposal system jointly with an adjoining municipality (Wisconsin Supreme Court: *Behnke v. City of Neenah*, 266 N. W. 781).

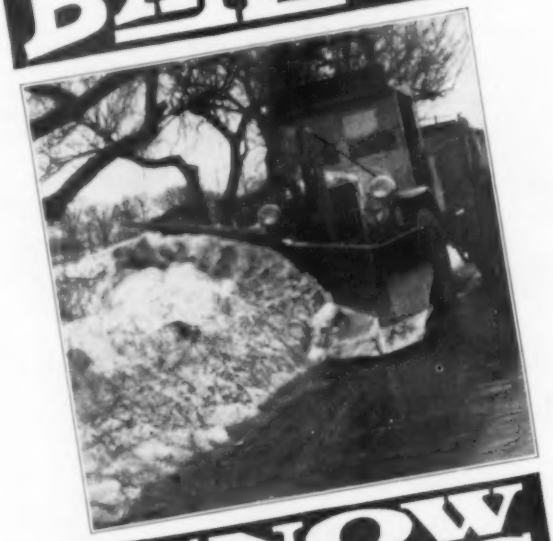
Streets

Street abutter held not entitled to damages for closing of part of street not adjacent to his land, outlet being preserved and he sustaining no damage not suffered by other property owners similarly situated (West Virginia Supreme Court of Appeals: *Richmond v. City of Hinton*, 185 S. E. 411).

Workmen's Compensation

City held liable under workmen's compensation act for death of foreman on way home in car provided for his use by city (Pennsylvania Superior Court: *Bock v. City of Reading*, 182 Atl. 732).

BAKER



SNOW PLOWS

Coast to Coast Performance

For 28 years Baker Snow Plows have been leaders in rendering real snow-moving service to municipalities and highway departments throughout the nation. You may, with perfect confidence, select any plow from the 21 models for trucks or any tractor plow and know you have chosen wisely. Better curvature, sturdier construction, snug attachment and practical new features have kept Baker Plows in first place for over a quarter of a century. They depended on Bakers in 1908. You can depend on them in 1936.

If you will give us name and model of your trucks or tractors, we shall be glad to send you the latest Baker Snow Plow bulletins.

*THE BAKER MFG. CO.
503 Stanford Ave., Springfield, Ill.

FOR MOTOR TRUCKS AND TRACTORS

*Exclusive Users of Sectional Tripping Blades for Truck Plows

HAZARD ARMORTITE CABLE

(Non-Metallic Armored)

All airport wiring is of vital importance but must be underground. Hazard Armortite Cable is ideal for this purpose. It is easy to install and connect because of its flexibility, light weight and simple method of splicing and taping. It has been used in many of the country's largest airports for boundary lighting, flood lighting, beacons and obstruction lighting. U. S. Department of Commerce Aeronautics Bulletin "Airport Rating Regulations" approves the use of non-metallic armored cables for airport wiring.

Sales Offices:
New York Chicago Philadelphia
Atlanta Seattle Dallas
Pittsburgh Buffalo Boston
San Francisco Los Angeles
Detroit Washington

HAZARD INSULATED WIRE WORKS
Division Of THE OKONITE COMPANY
WORKS: WILKES-BARRE, PA.

Municipal and Civic Publications

Prices quoted do not include postage, unless so stated

Accounting

Introduction to Governmental Accounting.—By Lloyd Morey, A.B., C.P.A. (Ill.), LL.D., Professor of Accountancy and Comptroller, University of Illinois; Vice-Chairman, National Committee on Municipal Accounting. John Wiley & Sons, Inc., New York. Second edition, 1936. xvi + 318 pp. $3.50 from THE AMERICAN CITY.

With the increase of governmental functions, the necessity for adequate methods of financial administration is steadily augmented. During the last ten years a distinct advance has come about in the understanding of governmental accounting problems and in the methods by which these problems are to be met. The National Committee on Municipal Accounting, of which Mr. Morey is Vice-Chairman, has made the most significant contribution to these ends, and this volume follows the principles and terminology developed by this committee. Mr. Morey deals chiefly with the basic principles underlying the treatment of public accounts rather than with details of form and procedure, and concerns himself with matters more or less common to all types of governments and public institutions.

Taxation

The June, 1936, issue of *Law and Contemporary Problems*, published by the School of Law, Duke University, is devoted to the subject of "The Collection of Real Property Taxes." Fourteen authorities in this field take part in the symposium. Recognizing that clumsy, inefficient, and often badly administered tax collection has been "permitted to creak along unheeded in times of prosperity," the Editor of this quarterly considers the time appropriate—now that the peak of tax delinquency has passed—to ascertain how existing tax collection devices may be remodeled to meet current needs. There is no separate treatment of the special assessment, and two topics for which plans were made had to be omitted from the symposium and are therefore briefly dealt with in the Editor's Foreword. These are: the overlapping of taxing units; and how urban communities can best utilize delinquent land which has reverted to them. 130 pp. Single copies, 75c; yearly subscription, $2.00. (Apply to Law and Contemporary Problems, Duke Station, Durham, N. C.)

Council-Manager Plan

The Citizens' Committee on Los Angeles City Government has prepared a pamphlet of 8 mimeographed sheets on "The Council-Manager Plan Proposed for the City of Los Angeles." Prof. Russell H. Ewing, of the University of Southern California, is Technical Director for the Committee. The pamphlet contains a proposal for a civic organization for Los Angeles, explaining the nature, functions, methods, objectives, secretariat, financing, constitution and by-laws of such a sound, central civic body. A list of existing defects in the city government is given; also 12 reasons why Los Angeles needs a modern council-manager form of government; and statements of the powers of the Council and of the city manager, respectively, under the manager plan. A selected bibliography for students of the general subject is given. (Apply to Citizens' Committee on Los Angeles City Government, Transportation Bldg., 7th and Los Angeles Sts., Los Angeles, Calif.)

Automobile Statistics

"Automobile Facts and Figures" has become an outstanding compendium of factual information on the automobile industry which is awaited by all who need last year's figures for a great many series running back a number of years. While some industries are wondering whether recovery is sound or merely apparent, the automobile industry in 1935 increased factory sales 45 per cent and advanced foreign sales 19 per cent. Employment about reaches the 1929 peak. Taxes are highest on record—$1,286,157,907, or 6 times what they were in 1919, with total registrations 3½ times what they were then. 96 pp. (Apply to Automobile Manufacturers Association, Inc., 366 Madison Ave., New York).

Population

Migration and Economic Opportunity, The Report of the Study of Population Redistribution.—By Carter Goodrich, Bushrod W. Allin, C. Warren Thornthwaite, Hermann K. Brunck, Frederick G. Tryon, Daniel B. Creamer, Rupert B. Vance, Marion Hayes, and others. University of Pennsylvania Press, 3622 Locust St., Philadelphia, Pa. 1936. xvii + 763 pp. $5.00 from THE AMERICAN CITY.

This book is the report of the study of Population Redistribution which was organized in 1934 under the auspices of the Industrial Research Department of the Wharton School of Finance and Commerce of the University of Pennsylvania. Its commission was to make a reconnaissance of the field of internal migration in the hope of discovering bases for the determination of public policy in guiding movements of population. The report is divided into two parts. Part I, entitled "The Need for Migration," analyzes the changes in industrial and agricultural conditions and in the distribution of resources. Part II, entitled "The Control of Migration," records some foreign experience with migration, criticizes American measures, and makes some suggestions toward a migration policy.

Public Works Programming

The National Resources Committee is interested in promoting a planned and integrated program of public works construction in the United States over a period of years. To this end the committee is urging the cooperation of State Planning Boards in the compilation of an inventory on a six-year basis, classified by type of projects, by geographical location, and by priority, with the expectation that the program will be kept currently up to date by annual revision. A pamphlet entitled "Suggested Procedure for Public Works Programming" contains an outline of inventory procedure, a system of classification and definition of project types, and, finally, a group of forms with instructions for filling them out. 35 pp. + forms. (Apply to National Resources Committee, Interior Building, Washington, D. C.)

Parking Meters

The question of metered parking has aroused a considerable conflict of interests between motorist citizens, merchants and business men, and public officials. The American Municipal Association has felt the discussion to be increasingly important to our parking problem and has therefore published a detailed résumé of the development in this field to date, under the title of "Parking Meters." 36 pp. (Apply to THE AMERICAN CITY, 470 Fourth Ave., New York.)

Diesel Engines

"Diesel Electric Plants" is a practical text on characteristics of diesel engines, principles of diesel-driven generators, governors, voltage regulators, parallel operation of generators, installation and maintenance of electric equipment, automatic controls and alarms, and diesel trains. The author is Edgar J. Kates, Editor, Diesel Engine Section, Kent's Mechanical Engineers' Handbook, and a consulting engineer of New York. 176 pp. $2.00. (Apply to American Technical Society, Drexel Ave. at 58th St., Chicago.)

Minnesota Year Book

The Minnesota Year Book for 1936 is very complete in its presentation of all those statistics of state and local government which should be of prime interest to every citizen and to every public official. Valuations, taxes and rates, and indebtedness are presented in simple alphabetical tables, usually in a comparative form, for a number of years back, so that trends may be observed. 298 pp. $5.00. (Apply to League of Minnesota Municipalities, 15 University Library, Minneapolis, Minn.)

Trade Wastes

Textile Waste Treatment and Recovery.—By John C. Geyer, and William A. Perry. The Textile Foundation, Inc., Thomas Bldg., Washington, D. C. 1936. 118 pp. $1.00 from The Textile Foundation.

This treatise presents the result of a survey of the treatment and disposal of waste waters produced in the textile industries and was undertaken at the direction of the Textile Foundation with the cooperation of the University of North Carolina and in council with Dr. H. G. Baity, Dean of Engineering, and an Advisory Committee on Textile Waste Treatment. The report is divided into two parts: Part I deals with stream purity, textile processes and wastes, the reduction of liquid waste and the recovery of by-products, the treatment and recovery of textile and wool scouring wastes, the admission of textile wastes to sewers, and gives a summary of research in the field of textile waste disposal. Part II deals with treatment plants, reports on municipal sewage works treating textile wastes, and contains three appendices covering state laws, analysis data sheets and data on chemicals, together with a classified bibliography of 340 references. The text of this report is prepared in a helpful and understanding manner which will be appreciated both by the Textile Institute and by sanitary engineers and sewage-works operators upon whom rests the burden of solution of this trade waste problem.

Water Supply

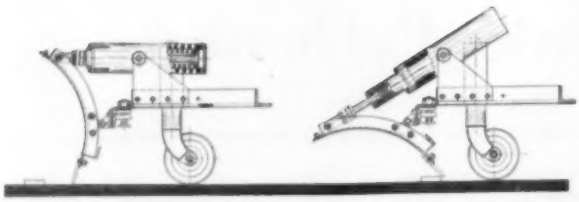
The State Water Policy Commission of New Jersey in cooperation with the United States Geological Survey has issued a report on the surface water supply of New Jersey, containing stream flow records and representing investigational work for the six-year period ending September 30, 1934. It should be a convenient reference for many people of the state who are in need of accurate information on the flow of streams in studying problems dealing with the development of New Jersey's surface water resources. 253 pp. (Apply to State Water Policy Commission, 28 W. State St., Trenton, N. J.)

Water Purification

Each year a number of men directly in charge of water purification plants are called together for the Ohio Conference on Water Purification. The report of the latest conference contains discussions of miscellaneous local plant problems and the following papers: "A Review of Water Purification and Water Softening Literature for the Year 1935,"; "Licensing of Water Works Employees"; "The Comparison of the B. Coli Results at Ohio Filtration Plants in 1934"; "Mixing Chamber Practice"; "The Cross-connection Problem"; "Comparative Effects of Ultra Violet Light Intensities on Chlorine and Chloramine in Water"; a symposium on the examination and control of algae; "New Permanent Standards for the Determination of Residual Chlorine"; "Dirty Filter Sand, Effect on Bacterial Growth in Filter Beds at Elevated Water Temperatures, Remedies, etc." 58 pp. (Apply to Ohio Conference on Water Purification, Office of Secretary, Room 302, Depts. of State Bldg., Columbus, Ohio.)

The Tax Dollar

"Local Government in New Jersey, Main Line Traffic of the Public Dollar," is an extremely clever presentation of local budget procedure. The public dollar leaves the collection terminal and goes down the main line from budget station to appropriation station to control station, and finally arrives at the expenditure terminal. The pamphlet is sufficiently attractive and novel to catch the eye of the usually disinterested citizen. There are some "puzzle documents" at the end which are quite instructive in the appearance of the public accounts. 16 pp. (Apply to Princeton Local Government Survey, Princeton University, Princeton, N. J.)



A SPECTACULAR improvement in safety blade trips. Telescoping *dual* compression springs afford 100% more forward pitch to the moldboard, 50% more tension. Thus the plow will ride with safety over manhole covers, railroad tracks and even curbings. (Patents Applied For.)

SAFETY
DURABILITY
EFFICIENCY
ECONOMY

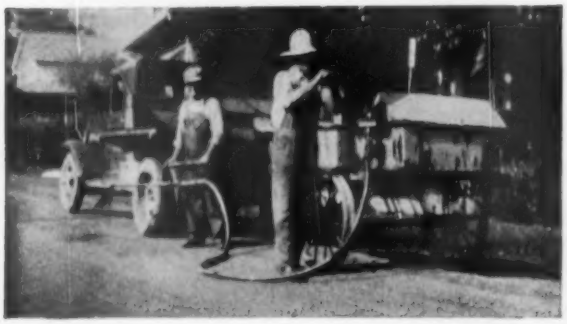
YOU OWE IT TO YOUR BUDGET

True economy is achieved not by buying cheap equipment, but by buying equipment built to give continuous service without added expense. The quality and durability of Good Roads Champion Snow Plows have remained unsurpassed for a quarter of a century, twenty-five years of constant experimentation and improvement in design and construction.

SEND FOR CATALOG SP101

MADE BY

GOOD ROADS MACHINERY CORPORATION, KENNETT SQUARE, PA.



Save with LITTLEFORD No. 84-HD

This Littleford oil burning maintenance kettle is a "saver."

Double-Heat Circulation saves 20-25% on time and fuel for users and vents the fumes out the stack. This kettle is windproof and fireproof. A running gear that can "take it" stands up under high-speed trailing and hard usage. The screened reservoir melts bitumen faster, without coking or danger of flashing.

Equipped with the Littleford hand spray, this little fellow does a real man-sized job. Ask, now, for prices and particulars.

LITTLEFORD
Road Maintenance Equipment
SINCE 1900
LITTLEFORD BROS. 500 E. PEARL ST. CINCINNATI, O.

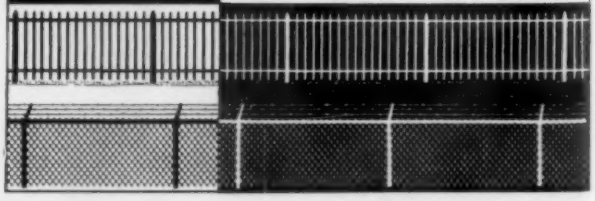
We grow a complete assortment of
Northern-grown specimen
Trees—Shrubs—Evergreens and
other ornamentals
for
Park, Street, and Municipal plantings.

Consultations and inquiries invited

PONTIAC NURSERIES
ROMEO, MICHIGAN

FENCE *for every* **PUBLIC PROPERTY** *need*

Stewart FENCES
IRON AND CHAINLINK WIRE
New Catalog Sent Upon Request
THE STEWART IRON WORKS CO., INC.
326 Stewart Block Cincinnati, Ohio



Planning

"Planning Laws of the New England States—Analysis and Texts, April, 1936," has been produced by the New England Regional Planning Commission of the National Resources Committee, in response to a demand for information that would be helpful in the revision and improvement of existing planning laws in the several New England states, through the comparing of recent laws with the older statutes, so that each state may take advantage of the progress made in the others. The complete texts of the laws have been included, and an outline analysis of them for each state is given, covering state planning, municipal planning, and municipal zoning. Through the device of continuous folding sheets of analytical tables, and clear, brief discussion of separate points, comparison is made easy. Publication No. 31 of the Commission. Besides the tables, 72 mimeographed sheets. (Apply to New England Regional Planning Commission, 2100 Federal Bldg., Boston, Mass.)

"Municipal and County Planning Legislation and Procedure in New Jersey" is a 63-page pamphlet prepared and issued by the New Jersey State Planning Board. The planning procedure under the 1930 Municipal Planning Act of New Jersey is outlined. Also, there are sections on zoning procedure, regulation and control of land subdivision activity, and one on county planning. In the appendix the New Jersey planning laws are given in full and a model municipal planning board ordinance is presented. 25c. (Apply to the New Jersey State Planning Board, Trenton, N. J.)

"The Basis of the Master Plan" is the title of a paper by H. C. Howland, C.E., Acting City Engineer, telling "How Culver City, Calif., Obtained the Basic Data Without Which No City Plan Can Be Fully Successful." It was presented before the Association of City Planners of Los Angeles County, at Culver City, July 25, 1936. Culver City covers a subdivided area of six square miles, which is only 50 per cent developed, and offers a wonderful opportunity for intelligent planning. These 7 mimeographed sheets explain how the initial fact-finding was started, and how the work is continuing. (Apply to the Civic Development Dept., Los Angeles Chamber of Commerce, Los Angeles, Calif.)

Neighborhood Planning

Technical Bulletin No. 5 of the Federal Housing Administration is entitled "Planning Neighborhoods for Small Houses." Its intention is to point out the many advantages of properly planned neighborhoods, and it offers suggestions concerning the manner in which neighborhoods may be created and protected so as to preserve the value of residential properties. 32 pp. Diagrams. (Apply to Federal Housing Administration, Washington, D. C.)

Utility Rates

The Public Utility Committee of the Citizens League of Cleveland submitted a report on the problem of gas rates in Cleveland to the Public Utility Committee of the city on August 10, 1936. Excessively high rates enforced by the monopoly of the East Ohio Gas Co. have aroused public indignation and promoted considerable investigation. This report explains, justifies, and then recommends a service-at-cost plan as the basis of a new gas rate for Cleveland. 15 pp. (Apply to The Citizens League of Cleveland, 1307 Swetland Bldg., Cleveland, Ohio.)

Highway Safety

The National Safety Council has just published the second pamphlet in "The New War on Accidents" series, produced as part of its *Five Year Highway Safety Campaign*. Entitled "State and Community Organization for Safety," it deals with the general principles of safety organization and then goes into some detail in describing types of safety organization and presenting typical set-ups for state, county and community councils. A program of activities for such councils is suggested and the costs and methods of financing the program are indicated. 24 pp. (Apply to National Safety Council, 20 N. Wacker Drive, Chicago, Ill.)

W.P.A.

The District of Columbia Works Progress Administration has chosen September for the appearance of its first issue of a pamphlet entitled "Work, A Journal of Progress," which will henceforward appear each month. Mr. Hopkins opens this issue with an article on the aims and policies of WPA, and succeeding articles describe the many different types of work undertaken by this administration. 32 pp. (Apply to District of Columbia Works Progress Administration, Washington, D. C.)

Housing

The Library Section of the Sub-Committee on Research and Statistics of the Central Housing Committee has issued a September 1/15 "Housing Index-Digest" of 108 pages. The housing activities of Copenhagen, Denmark, and Stockholm, Sweden, observed this summer by the editor, Adelaide R. Hasse, are given in some detail. In addition there are notes on activity in other countries, as well as a bibliography of recent articles on various housing subjects. (Apply to The Library Section of the Sub-Committee on Research and Statistics of the Central Housing Committee, Washington, D. C.)

The "Report on the Overcrowding Survey in England and Wales" has just been published. The survey has been conducted in accordance with the standards laid down in the Housing Act of 1935, and states that under those standards 3.8 per cent of the families throughout England and Wales are living in overcrowded conditions. The report is compiled from approximately 1,500 reports of individual housing authorities in England and Wales and presents a comprehensive set of tables in addition to an explanatory write-up. xxiv + 157 pp. 8s. (Apply to H. M. Stationery Office, Adastral House, Kingsway, London, W.C.2, England.)

Police Administration

Miss Sarah Greer, the Librarian of the Institute of Public Administration, has published the fourth in a series of bibliographies on governmental subjects. "A Bibliography of Police Administration and Police Science" should be of particular interest to police specialists. It is world-wide in scope, but with particular emphasis on American problems and with the American viewpoint. 152 pp. (Apply to Institute of Public Administration, 302 E. 35th St., New York.)

Health

The Department of Health of Memphis, Tenn., has just published its first health bulletin, to appear monthly hereafter. It contains a few write-ups of recent articles of interest in the health field, a book review and a list of new articles on numerous health subjects, and the department statistics and reports. 11 pp. (Apply to the Library and Publicity Division, Dept. of Health, Memphis, Tenn.)

Housing

"Housing ———or Else, A Letter to a Banker," by Langdon Post, gives answers to a number of the typical criticisms of public housing advanced by private enterprise. Mr. Post gives the figures to show that private enterprise cannot build for the lower third income group, and attempts to prove that subsidized housing will not compete with private enterprise and has not done so in England. 22 pp. (Apply to New York City Housing Authority, 10 E. 40th St., New York.)

Child Welfare

Volume 1, Number 1, of a Monthly News Summary entitled *The Child*, was published in July by the Children's Bureau, U. S. Department of Labor; Katharine F. Lenroot, Chief. 28 photo offset pp. This is the successor of the Child-Welfare News Summary formerly issued in mimeographed form. The material in this first number is presented under the following main heads: The Social Security Program for Children, Maternal, Infant, and Child Health; Child Labor; Socially Handicapped Children; International and Foreign Notes; Events of Interest. (Apply to the Children's Bureau, Washington, D. C.)

Municipal Government

"New York Advancing, A Scientific Approach to Municipal Government," is a record of two years of accomplishment in the government of the city of New York, together with a picturization of future developments already planned. Each of the departments of the city government has its own interesting story presented in accurate and very readable form. Illustrated. 368 pp. (Apply to Municipal Reference Library, 2230 Municipal Building, New York.)

Tax Exemption of Industries

The National Department of Municipal Finance Officers issues reports from time to time on matters of interest to the financial officers of American cities. The latest report is "Tax Exemptions and Abatements Offered by Cities to Attract New Industries." Three types of city policy are analyzed: exemption forbidden; exemption forbidden but other aid permitted; exemption permitted. 9 pp. (Apply to National Dept. of Municipal Finance Officers, 730 Jackson Pl., Washington, D. C.)

Traffic Officers

The New England Traffic Officers' Training School, conducted by the Bureau for Street Traffic Research, Harvard University, and the International Association of Chiefs of Police, has published a summary of its curriculum from August 17 to 29, 1936. Lists of faculty members and students are given. Each lecture is outlined in detail. At the end of the notebook appears a suggested plan for the installation of accident prevention bureaus and a reference list of reading material on the subjects covered by the lecturers. 84 pp. (Apply to New England Traffic Officers' Training School, Widener Library—Room P, Harvard University, Cambridge, Mass.)

Slum Reclamation

The purpose of the Alley Dwelling Authority is to rid Washington of its inhabited alleys. It is an independent agency of the Federal Government. A report on its work is given in a mimeographed statement of 8 sheets, under the title of "Accomplishments of the Alley Dwelling Authority as of June 24, 1936," signed by John Ihlder, Executive Officer. (Apply to the Authority, Washington, D. C.)

Mosquito Extermination

Important papers were given at the annual meeting of the New Jersey Mosquito Extermination Association held at Atlantic City, N. J., March 4-6, 1936. These are issued in the Proceedings of the meeting (213 pp.). The need of this work, its policies, methods, procedure, and results are presented from various points of view and broad experience. (Apply to the Secretary of the Association, Thomas J. Headlee, Entomologist, New Jersey Agricultural Experiment Station, New Brunswick, N. J.)

Parking Meters

The United States Conference of Mayors has published a complete review of the development of the "parking meter" as a method of parking control, entitled simply "Parking Meters." It is believed by this organization to be the most noteworthy development in traffic control since the advent of the traffic light. Parking meters are now in operation in 15 cities and are rapidly winning favor in others. A second report on this subject will soon be issued by The Conference of Mayors on the legality of the parking meter. 16 pp. (Apply to United States Conference of Mayors, 730 Jackson Pl., Washington, D. C.)

Traffic Regulations

The Iowa State Planning Board has recently completed and published "A Compilation of Traffic Regulations in Thirteen Iowa Cities." Its purpose is to give concrete evidence of the divergence and lack of design of traffic ordinances in various Iowa cities and to urge some action for the uniformity of traffic regulations. Incident to drawing up uniform municipal traffic regulations, these data are pertinent in the study of traffic flow, accidents, accumulation of vehicles and persons, parking, etc. 12 pp. 25c to persons outside of Iowa. (Apply to Iowa State Planning Board, State House, Des Moines, Iowa.)

Prepare Now!

HEIL Quality PRODUCTS

HOISTS · BODIES · TANKS
ROAD SCRAPERS · SNOW PLOWS
BOTTLE WASHERS · DEHYDRATORS
OIL BURNERS · WATER SYSTEMS

Prepare now to keep streets and highways open this winter by equipping all available trucks with High-Speed, efficient, Gettelman, Heil Quality-Built Snow Plows—This dependable line of plows includes: "V" type for heavy-duty service, as well as blade and semicircle plows.—Discuss your snow removal problems with a Heil representative and by all means get Heil recommendation before you buy—Send for free Catalog.—Address:

THE HEIL CO.

Plant and General Offices: Milwaukee, Wis. Branch Factory: Hillside, N. J.

FACTORY BRANCHES AND DISTRIBUTORS EVERYWHERE

Power Driven

GRAVELY SIDEWALK SNOW PLOW

Effectively clears paths 40-54" wide. Goes in places you wouldn't think of taking a big plow. Attach it to your GRAVELY MOWER and you have a first-rate all-year machine.

Write for Literature

Gravely Motor Plow & Cultivator Co., Dunbar, W. Va.

A Very Complete Line of Nursery Stock

Including native trees, shrubs, vines and evergreens for formal and natural planting of Parks, Private Estates, Roadsides, etc.

List and Quotations Furnished on Application

Forest Nursery Company, Inc.

McMinnville Tennessee

1 2 3 4 5 6 7 8 9
IS YOUR CITY PROPERLY NUMBERED?
Write for illustrated 16-page catalog No. 36-A
PREMAX SALES DIVISION, CHISHOLM-RYDER CO., INC., NIAGARA FALLS, NEW YORK

PRINCE GEORGE HOTEL

Business Men! Consider This 5-Point Plan for Real Comfort!!

1. Two Automobile Entrances—27th and 28th Streets.
2. Famous for New England Food—Moderately Priced.
3. Old Original English Tap Room Serving Finest Wines and Liquors.
4. Excellent Accommodations for Business Meetings, Luncheons, Banquets—Serving 15 to 200 Persons.
5. When in town overnight—you are assured of a good night's rest. Rates range from $2 for one—$3 for two.

Alburn M. Gutterson, Mgr.

15 East 27th St., N. Y., Between Madison & Fifth Avenues, 14 East 28th St., N. Y.

PRINCE GEORGE HOTEL

During October we hope you will remember to mention THE AMERICAN CITY

Municipal Government

A number of public employees of Los Angeles felt the need of arousing more public interest in government and of improving citizen-knowledge. Consequently, they drew up a constitution in 1931 for a Speakers' Club of 50 active members. After five years of activity they have published a 17-page pamphlet entitled "The Speakers' Club of Los Angeles," which explains in detail the plan, purpose, scope, techniques, membership, and achievements of this organization. The members are enthusiastic and feel that they have gained in personal development in addition to increasing popular education through their many talks on government subjects. 40c the single copy; special prices for large numbers. (Apply to Civil Service Assembly of the United States and Canada, 850 E. 58th St., Chicago, Ill.)

Other Reports Received

ALBANY, N. Y.—Albany Port District Commission: "The Port of Albany." Report for 1935. 12 pp.

AUSTIN, TEXAS.—"City Indebtedness in Texas," The University of Texas Bulletin, July 22, 1936. 102 pp.

CHICAGO, ILL.—"Rules and Regulations Governing Operations on the Chicago Municipal Airport," by Bureau of Parks, Recreation and Aviation. 14 pp.

CHICAGO, ILL.—"Permanent Registration Law of Illinois," issued by Board of Election Commissioners. 40 pp.

CHICAGO, ILL.—"Report of the Comptroller for the Year 1935." 158 pp.

DALLAS, TEXAS.—General Budget, fiscal year 1936-1937. 50 pp.

EAST ORANGE, N. J.—Annual Report, Board of Health, 1935. 74 pp.

JERSEY CITY, N. J.—"Quarterly Financial Statistics Issued by the Comptroller of Jersey City, N. J., Dated August 31, 1936." 5 pp.

MEMPHIS, TENN.—"Zone Ordinance and Land Subdivision Rules," by Memphis City Planning Commission. 15 pp.

MORRISVILLE, VT.—"Community Financial Understanding and control," Remarks before Vermont Bankers Association. 8 pp.

PORTLAND, ORE.—Annual Report, Auditor, year ending November 30, 1935. 190 pp.

TOPEKA, KANS.—"Public Welfare Service in Kansas, 1935." Kansas Emergency Relief Committee Bulletin No. 355. 323 pp.

Conventions -- When and Where

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

OCTOBER 5-9.—ATLANTIC CITY, N. J. (6,000)
National Safety Council. Annual Safety Congress and Exposition. Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Illinois.

OCTOBER 6-7.—WAUKESHA, WIS.
American Water Works Association—Wisconsin Section. Annual convention. (Hotel Avalon.) Secretary, L. A. Smith, Superintendent of Water Works, City Hall, Madison, Wis.

OCTOBER 6-7.—WELLINGTON, KANS. (250)
Kansas Association of Municipal Utilities. Annual convention. Secretary-Treasurer, L. C. Angevine, Superintendent, Water and Electric Department, McPherson, Kans.

OCTOBER 7-9.—NORTH PLATTE, NEBR. (500)
League of Nebraska Municipalities. Annual meeting. (Palmer Hotel.) Secretary-Treasurer, C. E. Beals, 204 Brownell Building, Lincoln, Nebr.

OCTOBER 7-8.—MILWAUKEE, WIS. (300)
Wisconsin Chiefs of Police Association. Annual meeting. Secretary, R. H. McCarty, Kaukauna, Wis.

OCTOBER 9-10.—GENEVA, N. Y. (125)
New York State Sewage Works Association. Fall meeting. Secretary-Treasurer, A. S. Bedell, State Department of Health, Albany, N. Y.

OCTOBER 9-10.—TYLER, TEXAS. (300)
League of Texas Municipalities. Annual meeting. Executive Secretary, E. E. McAdams, 2220 Guadalupe Street, Austin, Texas.

OCTOBER 12-15.—FORT SMITH, ARK.
American Water Works Association—Southwest Section. Annual convention. (Hotel Goldman.) Secretary-Treasurer, Lewis A. Quigley, Fort Worth, Texas.

OCTOBER 12-15.—FORT SMITH, ARK.
Arkansas Water and Sewage Works Conference. Annual conference; meeting with Southwest Water Works Association. Secretary, Harrison Hale, College of Engineering, University of Arkansas, Fayetteville, Ark.

OCTOBER 12-16.—ST. LOUIS, MO. (500)
National Association of Public School Business Officials. Annual convention. (Hotel Jefferson.) Secretary, H. W. Cramblet, Board of Education, Pittsburgh, Pa.

OCTOBER 13-17.—PITTSBURGH, PA.
American Society of Civil Engineers. Fall meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

OCTOBER 14-16.—ATLANTIC CITY, N. J.
Pennsylvania Water Works Association. Annual convention. Secretary, Dr. F. Herbert Snow, 327 Telegraph Building, Harrisburg, Pa.

OCTOBER 15-17.—CHICAGO, ILL. (100)
American Municipal Association. Annual meeting. Executive Secretary, Clifford W. Ham, 850 East 58th Street, Chicago, Ill.

OCTOBER 15-16.—SARATOGA SPRINGS, N. Y.
American Water Works Association—New York Section. Fall meeting. (New Worden Hotel.) Secretary, R. K. Blanchard, Care of Neptune Meter Co., 50 East 42d Street, New York.

OCTOBER 15-17.—SPRINGFIELD, ILL.
The Public Ownership League of America. Annual meeting. (Abraham Lincoln Hotel.) Secretary, Carl D. Thompson, 127 North Dearborn Street, Chicago, Ill.

OCTOBER 19-21.—RICHMOND, VA. (200)
International City Managers' Association. Annual convention. Executive Director, Clarence E. Ridley, 850 East 58th Street, Chicago, Ill.

OCTOBER 19-20.—NEW ORLEANS, LA. (50)
Conference of State Sanitary Engineers. Annual meeting. Secretary-Treasurer, R. E. Tarbett, U. S. Public Health Service, Washington, D. C.

OCTOBER 20-23.—NEW ORLEANS, LA.
American Public Health Association. Annual meeting. Executive Secretary, Dr. Reginald M. Atwater, 50 West 50th Street, New York.

OCTOBER 21-23.—WHITE SULPHUR SPRINGS, W. VA. (250)
American Institute of Steel Construction, Inc. Annual convention. (Greenbrier Hotel.) Secretary, V. G. Iden, 200 Madison Avenue, New York City.

OCTOBER 21-24.—CINCINNATI, OHIO. (135)
Civil Service Assembly of the United States and Canada. Annual assembly. Director, G. Lyle Belsley, 850 East 58th Street, Chicago, Illinois.

OCTOBER 22-23.—LITTLE ROCK, ARK. (300)
Arkansas Municipal League. Annual convention. Acting Director, Spencer D. Albright, University of Arkansas, Fayetteville, Ark.

OCTOBER 23-24.—ATLANTIC CITY, N. J.
American Water Works Association—New Jersey Section. Joint meeting with the New Jersey Water Works Association and the South Jersey Association of Water Superintendents. (Hotel Ambassador.) Secretary of the Section, P. S. Wilson, 325 Washington Street, Glen Ridge, New Jersey.

OCTOBER 26-28.—KANSAS CITY, MO.
American Water Works Association—Missouri Valley Section. Annual meeting. Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

OCTOBER 26-28.—TOPEKA, KANS.
League of Kansas Municipalities. Annual convention. Executive Secretary, John G. Stutz, Lawrence, Kans.

OCTOBER 26-29.—KANSAS CITY, MO.
Missouri Water and Sewerage Conference. Annual conference. Secretary, R. R. Stewart, 200 Monroe Street, Jefferson City, Mo.

OCTOBER 26-28.—CHARLOTTE, N. C.
American Water Works Association—North Carolina Section. North Carolina Sewage Works Association. Joint annual convention. (Hotel Charlotte.) Acting Secretary, A. R. Hollett, Chapel Hill, N. C.

OCTOBER 29-31.—CHARLOTTESVILLE, VA.
American Water Works Association—Virginia Section. Annual conference. Secretary, H. W. Snidow, Department of Health, 601 State Office Building, Richmond, Va.

OCTOBER 29-30.—INDIANAPOLIS, IND. (125)
Central States Sewage Works Association. Annual meeting. (Antlers Hotel.) Secretary-Treasurer, G. H. Radebaugh, Urbana-Champaign, Illinois.

NOVEMBER 6-7.—MINNEAPOLIS, MINN.
American Water Works Association—Minnesota Section. Annual meeting. (West Hotel.) Secretary-Treasurer, Ronald M. Finch, Wallace & Tiernan Co., Inc., 414 Flour Exchange, Minneapolis, Minn.

NOVEMBER 8-11.—OMAHA, NEBR.
National Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, R. W. Nelson, Chamber of Commerce, Cincinnati, Ohio.

NOVEMBER 15-17.—TOLEDO, OHIO.
National Association of Civic Secretaries. Annual convention. Secretary, Miss H. Marie Dermitt, Hotel William Penn, Pittsburgh, Pa.

NOVEMBER 16-17.—TOLEDO, OHIO.
National Municipal League. Annual conference on government. Secretary, Howard P. Jones, 309 East 34th Street, New York.

NOVEMBER 17.—TOLEDO, OHIO.
Proportional Representation League. Annual meeting. (Hotel Commodore Perry.) Executive Secretary, George H. Hallett, Jr., 309 East 34th Street, New York.

NOVEMBER 18-20.—CALGARY, ALTA.
Alberta Association of Municipal Districts. Annual convention. (Hotel Palliser.) Secretary, E. Pinchbeck, Spruce Grove, Alta.

NOVEMBER 18-20.—WASHINGTON, D. C.
Highway Research Board of the National Research Council. Annual meeting. Director, Roy W. Crum, 2101 Constitution Avenue, Washington, D. C.

NOVEMBER 19-20.—ASBURY PARK, N. J. (800)
New Jersey State League of Municipalities. Annual convention. (Berkeley-Carteret Hotel.) Executive Secretary, S. S. Kenworthy, Trenton Trust Building, Trenton, N. J.

NOVEMBER 20-21.—NEW BRUNSWICK, N. J. (300)
New Jersey Health and Sanitary Association. Annual meeting. (Woodrow Wilson Hotel.) Secretary, Dr. Edward Guion, Box 418, Atlantic City, N. J.

NOVEMBER 30-DECEMBER 4.—NEW YORK.
American Society of Mechanical Engineers. Annual convention. Secretary C. E. Davies, 29 West 39th Street, New York.

DECEMBER 1-3.—WINNIPEG, MAN.
Union of Manitoba Municipalities. Annual convention. Secretary, John Spalding, Miniota, Man.

DECEMBER 7-10.—SAN FRANCISCO, CALIF. (375)
American Association of State Highway Officials. Annual convention. Executive Secretary, W. C. Markham, 1220 National Press Building, Washington, D. C.

JANUARY 8-9.—BOSTON, MASS.
Massachusetts State Association of Selectmen. Annual meeting. Executive Secretary, Axel E. Zetterman, Hotel Westminster, Boston, Mass.

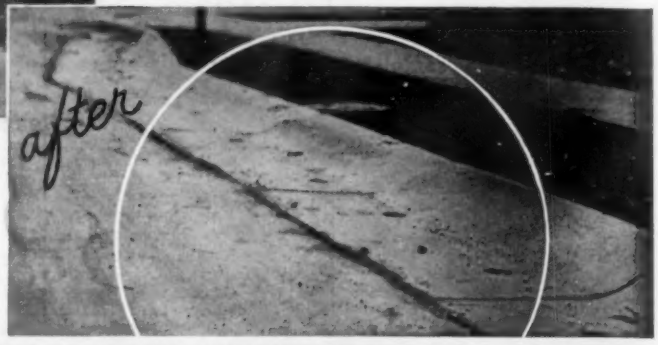
JANUARY 11-15.—NEW ORLEANS, LA.
American Road Builders' Association. Convention and Exhibit. Engineer-Director, Charles M. Upham, National Press Building, Washington, D. C.

MUD-JACK METHOD
for raising concrete curb · gutter · walks · street

Sunken Curb and Gutter Marked for Reconstruction

but

THE MUD-JACK METHOD *corrected the settlement and saved the reconstruction costs*



Save CURB — GUTTER WALKS — STREETS

The Mud-Jack method saves the slab —corrects the subgrade—eliminates pedestrian hazards. Write for data to reduce maintenance expense.

KOEHRING COMPANY

Pavers · Mixers · Shovels · Cranes
3026 WEST CONCORDIA AVE.

KOEHRING HEAVY DUTY

Draglines · Dumptors · Mud-Jacks
MILWAUKEE, WISCONSIN

WHAT PRICE DELAYED ALARMS?

FIRE LOSS— $4,000,000,000

Statistics compiled and published show the national fire loss for ten years—1926 to 1935 inclusive—to be in excess of the above figure.

Nearly all fires may be extinguished in their incipiency by a bucket of water.

The *Fire Alarm Box* is the only available and ever accessible means for transmitting fire alarms *directly* to the *fire department.*

Are your citizens not entitled to this protection?

THE GAMEWELL CO.
NEWTON MASSACHUSETTS

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

McIntosh and Seymour Merged with American Locomotive Co.

Effective September 1, 1936, the McIntosh and Seymour Corporation, of Auburn, N. Y., a wholly owned subsidiary of the American Locomotive Co., has been merged with the parent company, and the business will in the future be carried on by the American Locomotive Co., Diesel Engine Division, Auburn, N. Y.

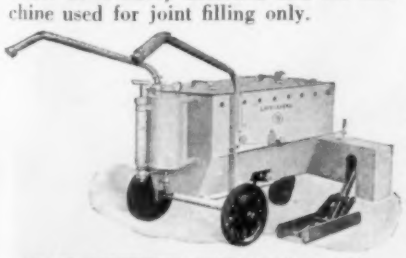
Robert B. McColl, President of the McIntosh and Seymour Corporation, has been appointed Vice-President of the American Locomotive Co., Diesel Engine Division, and Henry T. Sherman, John Thomas and Heinrich Schneider have been appointed Assistant Vice-Presidents.

The merger involves no interruption in the service rendered by the Auburn corporation, as the new Diesel Engine Division of the American Locomotive Co. will continue to build the complete line of McIntosh and Seymour four-cycle diesel designs. Furthermore, there have been added the internationally known two-cycle diesel designs of Sulzer Brothers of Winterthur, Switzerland, which are to be built and sold in the United States under the trade name Alco-Sulzer.

Machine Fills Joints, Marks Center Lines

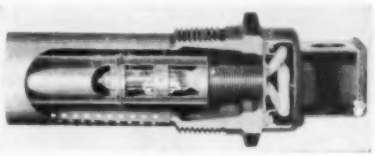
YOU can fill a center joint, mark an asphaltic line and sand the line in one operation with the No. 91 machine announced by Littleford Brothers, 500 East Pearl Street, Cincinnati, Ohio. The asphalt tank holds 20 gallons and is fitted with a screen over the outlet to prevent clogging. Hot asphalt is poured into the tank, and a gas heater circulates heat around the tank within a furnace shell. The tight cover has a vent pipe to admit air.

A second gasoline burner heats the outlet valve and keeps all pipe connections warm, preventing freezing of the material. The material is hot when it is applied to the joint, and therefore it penetrates to the bottom. The line-marking equipment will handle any line from 2 to 8 inches wide. It is easily detached and the machine used for joint filling only.



AN LB COMBINED JOINT FILLER AND LINE MARKER

The control handle operates like the handle on a motorcycle, and the outlet handle on the quick-acting valve is regulated from this control handle.



THE McDONNELL & MILLER SWITCH FOR PUMP CONTROL

New Float-Operated Mercury Switch for Pumps

A simple float-operated switch for starting or cutting-out pumps at predetermined levels of water or sewage in settling basins or sumps, has been developed by McDonnell & Miller, Wrigley Building, Chicago, Ill. The working mechanism consists of a mercury switch inside a float which is attached to the head by means of a flexible metallic bellows. As the float switch moves through its arc, the mercury switch makes and breaks contact. The unit is mounted in a horizontal position in the basin or sump at any desired height. When the liquid level reaches a height that will move the float, the mercury switch makes contact and lights a warning light or starts up the motor-driven pump.

Higgins New FWD Advertising Manager

Francis M. Higgins, Market Research Analyst for the Four Wheel Drive Auto Co., Clintonville, Wis., has been appointed Manager of Advertising to succeed W. M. Hanson, resigned. Higgins, who has been with the company since 1926, has filled various capacities in the sales and advertising departments. He is the author of a digest of road laws and highway truck regulations published by his company in 1934, which won national recognition.

Reo to Manufacture Trucks Exclusively

The Reo Motor Car Co., Lansing, Mich., has announced that henceforth it will concentrate exclusively on the manufacture of commercial vehicles. D. E. Bates, President and General Manager, has stated: "We feel that the day has passed when trucks and busses can be considered as side lines. The truck and bus and trailer engineer has nothing more to learn from the passenger car. Today, he must concentrate his entire attention on the problems presented by the increasing demand for efficiency in commercial vehicles, if he hopes to keep pace with progress."

The Reo Company was founded in 1904 by Ransom E. Olds, who still retains an active interest in its management as Chairman of the Board. Mr. Bates has been President and General Manager of the Reo Company since 1934, and for 20 years previous was Secretary-Treasurer.

Wrong Tires Listed

We wish to correct the caption of an illustration on page 111 of the August issue in which a trailer-mounted Giant Triplex sprayer made by the Hardie Manufacturing Co., Hudson, Mich., was illustrated. This sprayer was equipped with Goodyear tires as illustrated.

A Three-Way Hand Grenade

A large hand grenade which is thrown the same as any other gas grenade but which upon arrival at its destination separates into three sections with each section traveling in a different direction functioning as an individual grenade, has been developed by Federal Laboratories, Inc., 125 Forty-First Street, Pittsburgh, Pa. The three split sections of the Triple-Chaser grenade, a new Federal non-explosive product, travel rapidly with a sizzling, hissing sound, covering a wide area with great speed. This action eliminates the hazard of attempted throw-backs by members of the crowd to be dispersed, as each section becomes instantly hot and spreads a visible gas content over several hundred feet of space. This non-explosive grenade is available with either tear gas or sickening gas.

It is equipped with a two-second-delay time fuse providing for the proper distance between the grenade and the thrower when the triple-chase action occurs. This grenade meets the exacting requirements of law-enforcement officials for a product that enables them to control difficult situations. It also provides the non-hazardous, non-explosive and non-leaking qualities that are so essential for practical use.

THE TRIPLE-CHASER GRENADE

Another PARK-O-METER City!

TOPEKA . . . *capitol of Kansas*

Topeka — home of Alfred M. Landon — is now in the nation's spotlight for another reason. It has just installed 400 original Carl Magee meters. Like many other cities, Topeka had a serious parking problem, and like them, Topeka saw the answer—Park-O-Meters. Consequently these attractive meters are now controlling parking . . . helping business . . . and promoting safety in this forward-looking city. Your city, too, has a definite need for Park-O-Meters. Write, wire, or call for complete details at once.

Meet MR. H. G. BARRETT

. Topeka's progressive mayor, who was largely instrumental in bringing Park-O-Meters to his city.

DUAL PARKING METER CO.

Commerce Exchange Bldg. ***Carl C. Magee, President*** Oklahoma City, Okla.

YOUR CITY TOO

. . . *can start with one or two . . .*

1 Start with *one* Marion Refuse Compressor in your City . . . Put it to work on one route, and compare it with your other garbage trucks, on all other routes, in *performance* and in *operating costs.* You'll soon be ordering your *second,* and your *third* Marion. (The Marion carries a *bigger load,* because of the compression feature.)

2 The Village of Shaker Heights started with *two* Marions . . . In the words of the local paper, "the Board, gratified by the operation of the two closed type trucks, voted to add another."

3 Here is a photograph of the *three* Marions now owned by Shaker Heights, ready to give the Village a garbage collection service that will be easier, speedier and more economical than ever before. — *Write for further information.*

MARION
METAL PRODUCTS CO.
MARION OHIO

LOADING FROZEN SNOW WITH A HAISS MACHINE

A Mechanical Snow Loader for Frozen Snow Piles

Plows, sweepers and mechanical snow loaders, each in its place, are capable of handling even a heavy snowfall when the snow is dry and easy to handle. But in the heavy snow belt, the tough part of municipal snow removal is truck loading after a thaw and following a sharp freeze. In designing its snow loader, the George Haiss Mfg. Co., 142nd Street and Park Avenue, New York, had this worst operating condition in mind, as well as the need of high capacity in soft snow.

At the digging end of the Haiss machine a series of revolving paddles act like picks in breaking up the frozen snow, in a path 8 feet wide. The snow is fed from each side to the line of bucket-shaped conveyor flights which carry the snow up and into the trucks. The sharp-toothed edges of the flights help pick up icy lumps more easily than a smooth flight. In the design of the Haiss loader, it is intended that the snow be lifted up and carried on the upper run of the conveyor. In light snow the latter is piled full, to the top of the high skirtboards. On a test run, this type machine has been clocked putting up loads at a rate of 7 cubic yards per minute.

A high and scraper-blade-edged plow is mounted on the loader just back of the revolving paddles. This cuts a clean path as the machine drives its way through the snow piles. Normal practice is to plow snow into windrows, and let the loader travel steadily along with its 9-foot-per-minute slow-speed worm driver engaged. The conveyor frame or "boom" is built with a near-horizontal overhanging extension at the top, from the end of which the snow is deposited directly into trucks. This boom is high enough to clear the sides of a truck body 10 feet 6 inches from the ground. As the over-all height of the loader is only 13 feet 10 inches, it safely clears trolley wires, bridges and any normal overhead obstructions.

The machine weighs 8 tons, giving adequate traction to the creeper belts, and it has a 46-hp motor to provide the driving power.

The Two Sides of Pipe Protection

Hill, Hubbell & Co., Chicago, Ill., a Division of the General Paint Corporation, Los Angeles, Calif., protects steel pipe on the exterior by coating and wrapping and on the interior with a multi-coat lining. More than 7,000 miles of pipe have been protected on the outside by the Hill, Hubbell multiple application process since 1928.

The mill-applied exterior pipe protection includes the application of a primer, two coats of enamel, one wrapping of felt and one of Kraft paper. Or for even greater protection the pipe may be covered with a primer, four coats of enamel, two wrappings of felt and Kraft paper at the same labor cost.

A machine was perfected early in 1935 by which Multi-Coat lining, a hot bituminous lining, is applied to pipe as small as 4 inches outside diameter in either single or double random lengths, and the pipe joints need not be uniform in length. The pipe is first thoroughly cleaned of all loose mill scale, rust, dust, water, oil and grease by the tube mill before being turned over to the General Paint Corporation for lining. It is then carefully primed.

The lining material for this pipe is heated to the proper temperature in thermostatically controlled, mechanically agitated kettles, and kept at proper temperature throughout the process. It is supplied to the point of application through an electrically heated feed line. At the application end of the feed line there is an electrically heated weir into which the hot coating is permitted to flow when the lining process starts. From this weir the hot coating overflows onto an electrically heated apron which carries it to the wall of the pipe while the pipe is revolving around the weir and feed line. As the pipe revolves, the weir and feed line are withdrawn a definite number of inches per revolution of the pipe. The speed of withdrawal is carefully calculated for each size of pipe. Thus the coating is applied spirally to the inner wall of the pipe quite the same as it is applied by the coating and wrapping process used on the outer wall by the General Paint Corp. The weir and apron are twice as long as the rate of their withdrawal from the pipe. A double application at the pipe ends is accomplished by revolving the pipe at the beginning and end of the operation, two complete revolutions without moving the weir and apron.

The lining unit is designed so that within a few inches of the point where the coating is laid onto the pipe, it comes in contact with a specially constructed, electrically heated ironer which is equipped with a shoe made to fit the curve of the pipe. For a 24-inch weir and apron, for example, this ironer is 36 inches long and about 6 inches wide. To every square inch of the lining this hot iron is applied three times in the process, leaving a dense, continuous, uniform lining. The minimum thickness of Multi-Coat lining is 1/16-inch.

The lining material is a coal tar enamel used because the water absorption of coal tar pitch is practically negligible. General Paint Corporation's Biturine Akwaline Enamel is an all coal tar pitch enamel, particularly prepared for water work. Its physical properties are such that it does not sag at 140 degrees F., nor will it crack at 0 degrees F. At lower cost an asphalt lining, preferred by some engineers, is provided. The asphalt used is a petroleum asphalt made to strict specification requirements.

Remington Rand Moves New York Offices

Remington Rand, Inc., has announced the removal of all New York City sales, service and executive offices to new and larger quarters in the Remington Rand Building, 315 Fourth Avenue at 24th Street.

The Columbia Alkali Corporation Making Liquid Chlorine

The Columbia Alkali Corporation, wholly owned subsidiary of Pittsburgh Plate Glass Co., has recently announced that liquid chlorine has been added to its products. A enw plant, modern in every detail, has been completed, and shipments are now being made in single- and multiple-tank cars and in 100- and 150-pound cylinders.

The new chlorine plant is located on the company's extensive property holdings at Barberton, Ohio. A standard type electrolytic cell is used, raw materials are in abundance, and the power situation is favorable.

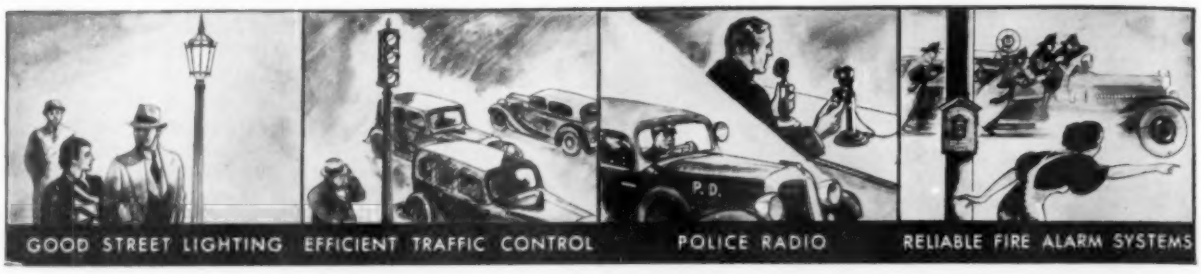
The executive offices of the Columbia Alkali Corporation are on the 43rd floor of 30 Rockefeller Plaza, New York. Branch sales offices are maintained in Chicago, Pittsburgh and Cincinnati, and at the plant in Barberton, Ohio.

New Appointments for Caterpillar in the West

Caterpillar Tractor Co., San Leandro, Calif., and Peoria, Ill., has announced the appointment of C. F. Mullins as Sales Engineer in the construction and governmental field for southern California, southern Nevada, Arizona and New Mexico, with headquarters at Los Angeles, Calif., and of G. W. Montfort as Western Representative of the Advertising Department, with headquarters in San Leandro, Calif. Immediately prior to his recent appointment, Mr. Mullins was western representative for the Wehr Co., of Milwaukee, Wis., and Mr. Montfort was in the Sales Promotion Department of the Union Oil Co.

This

or This?



You pay for Public Safety

whether you get it or not!

Add these up. America's annual cost of traffic accidents, $2,500,000,000! Burglary and theft, $250,000,000! Tremendous fire losses! . . . Against these balance the relatively insignificant sums now spent for *Public Safety* equipment . . . better street lighting, police radio, efficient traffic control, efficient fire alarm systems. Does it pay? Let's see. Better street lighting alone could *save* an estimated $275,000,000 — many times the cost of the equipment . . . These facts apply, on a smaller scale, to your own community. Worth investigating? Graybar can help you with unbiased advice . . . dependable equipment. Write us — or call your nearby Graybar house for information on all types of Public Safety electrical equipment.

GraybaR *Electric Company*

Distributed and guaranteed by GraybaR

OFFICES IN 79 PRINCIPAL CITIES. EXECUTIVE OFFICES, GRAYBAR BUILDING, NEW YORK, N. Y.

When you write for that catalog, kindly mention THE AMERICAN CITY

Light Truck Hauls 20 Tons on Test Run

With a gross vehicle weight of as much as 20 tons, a 1½-ton Chevrolet truck, transformed into a 6-wheeler by the installation of a Thornton four-rear-wheel drive, hauled, with a semi-trailer, a payload of more than 15 tons from Detroit to Boston and back over a roundabout circuit of 2,639.9 miles. Included in the equipment were Bendix-Westinghouse automatic air booster brakes, a Stewart-Warner tachometer and a Veeder-Root Hubodometer. The semi-trailer was a Trailmobile, 22 feet long with tandem axles, and both trailer and truck were equipped with Goodrich 32 x 6 10-ply Silvertown heavy-duty express tires.

The economy run was held under AAA sanction No. 3402, and the official figures show a cost of 3.62 cents for gasoline per vehicle-mile, 0.172 cents for gasoline per ton-mile of gross rolling weight, and a cost of 0.2392 cents per ton-mile of net payload for fuel and oil. The payload ton-miles per gallon of gasoline was 78.34.

New West Coast Manager for Robert W. Hunt Co.

Frederick S. Cook has been appointed Pacific Coast Manager for Robert W. Hunt Co., engineers, of Chicago, Ill. Mr. Cook will make his headquarters at 251 Kearny Street, San Francisco, Calif. A Columbia University graduate in Mining, in 1905, he has, since 1919, been Vice-President and Secretary of the McCraken-Ripley Co., of Portland, Ore. He is a member of the American Institute of Mining and Metallurgical Engineers and has been active in Veteran and other military organizations.

Our Front Cover

We are indebted to the Caterpillar Tractor Co., Peoria, Ill., for the attractive photograph from which the front cover of this issue of THE AMERICAN CITY was prepared. It shows a Caterpillar diesel Auto-Patrol removing snow from streets in a new residential section of Baltimore. The photograph was taken by Nelson Edwards on February 14, 1936.

Small Low-Cost Centrifugal Pumps

Utilizing a pressed steel frame, combined with quantity production and simplicity of design, has resulted in a new small low-cost centrifugal pump announced by Worthington Pump and Machinery Corporation, Harrison, N. J. This low-cost unit has fewer wearing parts and low maintenance costs. The pumps are furnished with direct motor drives or with pulleys for belt drive. The motor sizes range from 1/3- to 3-horsepower, delivering from 10 to 130 gallons per minute with heads from 10 to 100 feet.

The shaft is supported by two ball bearings enclosed in a dirt-proof and moisture-proof housing. The suction head is easily removable for inspection of the pump's interior. A choice of standard all-iron, and all-bronze fittings is offered. Bulletin W-310-B5 shows cross-sectional views and details of construction.

Cordes Heads Blaw-Knox

Frank Cordes, Senior Vice-President of the Blaw-Knox Co., Pittsburgh, Pa., has been elected President to fill the vacancy caused by the death of Irvin F. Lehman. Chester H. Lehman was elected a Senior Vice-President, and George L. Dumbauld was elected a Vice-President in addition to the position of Treasurer which he had previously held.

Sedimentation Basin with Spiral Baffle

The conventional sedimentation basin for a water works is rectangular, but many circular sedimentation basins have been built with radial flow and others with spiral baffle. The Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa., has developed the spiral baffle sedimentation basin for continuous flow as an economical method of creating long detention periods to permit floc to settle.

A flat-bottom open-top circular steel or iron tank serves ideally for this type of installation. Water enters the basin at the outer edge, and flows spirally inward to the center, where it is drawn off over an outlet weir. The floc channel is uniform, and no short circuits are possible. The general arrangement of the spiral baffle is the same for any size basin, the radii of its various segments being functions of the diameter of the basin.

The mixing chamber adjacent to the inlet may be of the conventional over-and-under baffle type, with the baffles inserted in the first few feet of the spiral. Similar construction is used for the dual-flow compartment type of mixing chamber. If mechanical action is desired, the agitator is usually placed outside the sedimentation tank.

The raw water is dosed with the proper chemicals as it enters the mixing chamber. Dry feed machines may be set over the first compartment of the mixing chamber, dropping the dry chemicals directly into the mixing chamber. A penthouse enclosure should be built over the machines for protection. Solution feed machines may be located in the filter house or pump house, and the chemical solution pumped up to the mixing chamber.

The outlet weir at the center of the tank may consist of a funnel skimming the surface, a circular tray weir or a straight weir located at the end of the last, or center, spiral.

The floc or sludge accumulates rapidly in the bottom of a settling basin, and means must be provided for removing it while the basin is in operation. Furthermore, drains must be arranged so that the basin may be emptied, when necessary, and thoroughly cleaned. A typical blow-off and drain system consists of a number of openings into two or more drain pipes with branches and equipped with suitable control valves.

This type of basin lends itself better to welded construction than to riveted construction, particularly as this also permits welded connections for the pipe line, assuring watertightness.

Thawing Hydrants and Mains with Steam

A steam generating unit, which, complete with its steam hose, weighs only 69 pounds net, has been developed by the Hauck Manufacturing Co., 126-134 Tenth Street, Brooklyn, N. Y., to produce superheated steam for thawing frozen water hydrants, culverts, water and gas pipes, traps, valves and meters. Steam from this unit will go through a 10½-inch cake of ice in 10 seconds, and through a 42-inch long cake of ice in 40 seconds. Steam is produced in one minute after the lighted burner is placed under the boiler. There is a steady flow of superheated steam in two minutes. This outfit is capable of generating up to 1½ boiler horsepower steam per hour at 30 pounds pressure.

The water storage capacity is 5 gallons and will operate the thawer at maximum capacity for 45 to 50 minutes without refilling. The steam generation is sufficient to maintain 30 pounds constantly when a hose and nozzle of 5/16-inch inside diameter is used. The outfit consumes approximately ½-gallon of gasoline per hour.

THIS UNIT PRODUCES STEAM QUICKLY FOR THAWING HYDRANTS

Reflectolux Pendant

Check these new features

1 MORE LIGHT . . . Alzak-finished aluminum reflector provides higher intensities per watt.

2 CONCEALED LIGHT SOURCE . . . the lamp filament located above rim of reflector practically eliminates glare.

3 NEW FLEXIBILITY . . . same canopy accommodates either series or multiple sockets . . . new design Biflectors may be added for asymmetric distribution . . . special applique ring makes decorative unit.

4 LOWER MAINTENANCE COST . . . relamping and cleaning possible without removing glassware from reflector.

5 GREATER VALUE . . . never before a unit so efficient and economical at the price.

NOW THE PENDANT STREET LUMINAIRE YOU'VE ASKED AND WAITED FOR

REFLECTOLUX

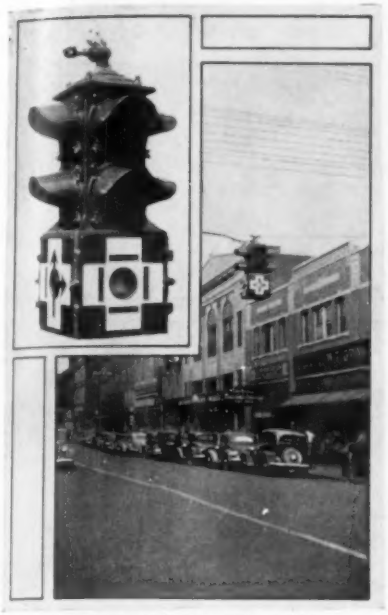
● The features above, abbreviated as they are, will convey to you that here is something new and different in a modern pendant street lighting luminaire. In designing REFLECTOLUX, Westinghouse concentrated all of its skill and experience in building fine street lighting equipment to provide a luminaire that meets the modern demands of engineers and street lighting authorities throughout the country.

Every nut and bolt, every design and turn of metal and glass *is new!* Efficiency, economy, maintenance and weight have been brought in tune with your modern demands for a new luminaire. By all means, get complete details today from your Westinghouse Representative, or write Westinghouse Electric & Manufacturing Company, Lighting Division, Edgewater Park, Cleveland, Ohio.

Ornamental Reflectolux Pendant

WHEN YOU THINK OF *Lighting* THINK OF

Westinghouse



DIRECTIONAL TRAFFIC UNIT, BRISTOL, TENN.

Traffic Signals with Directional Unit

The city of Bristol, Tenn., has recently equipped certain traffic signals with directional units that tell the motorist what he may do and where he may go in accordance with traffic regulations.

The main street is the state line between Bristol, Tenn., and Bristol, Va., and traffic rules vary in the two cities. In the Tennessee city there are a number of one-way streets, and where these intersect State Street it used to be necessary to use printed signs on lamp standards. The present signals were rebuilt from the former signals by sawing off the bottom section where the green lens was and replacing it with the Arroway directional unit shown.

"We are very much pleased with the operation of these signals," says R. L. Morton, Chief of Police of Bristol, Tenn., "and both cities have decided that all future signals will be of this type. We are experimenting with a pedestrian signal also developed by the Arroway Traffic Signal Corporation, Kingsport, Tenn., which we believe will prove of great value in handling pedestrians in connection with the operation of the regular traffic signals."

New Line of Gate-Valves

A new line of standard iron-body wedge gate-valves which have been developed by the Kennedy Valve Mfg. Co., Elmira, N. Y., embody several features which should be of interest to waterworks engineers. The metal in these valves is of a dense structure and has proved to be more than 50 per cent stronger than ordinary cast iron. To further insure strength and rigidity, the bodies are of oval section with well-rounded corners, the flanges and bolts are heavy, and ribbing is provided at the flanges on the larger flanged-end valves and at the yokes and caps of outside-screw-and-yoke valves.

There are no studs at any part of the valves, and all bolts have the nuts above the flanges and with ample room for standard open-end wrenches. The stuffing-box bolts and nuts are rust-proof to prevent corrosion. Heavy bronze bushings are used wherever the stem passes through a cast iron part, as at the yoke cap, packing gland and stuffing-box. The screwed-end valves have round ends for best distribution of the metal, and lugs for convenient application of pipe or chain wrench. Hand-wheel rims are of oval section and have only five spokes.

The discs are reinforced with interior posts, are self-draining in any position, and are reversible and interchangeable. The stems have standard threads with thread contact surface at least 1½ times the stem diameter. These valves are made in all standard sizes from 1½-inch to 60 inches for steam working pressures of 150 pounds and water working pressures of 200 pounds.

EBG and Niagara Alkali Move to Larger Quarters

The offices of Electro Bleaching Gas Co. and its affiliate, Niagara Alkali Co., have been moved to new and larger quarters on the 30th Floor of the Lincoln Building, 60 East 42nd Street, New York.

EBG reports that increasing business has resulted in this need for larger and better office facilities. This company was the first American producer of liquid chlorine, and the Niagara Alkali Co. was the first to produce caustic potash and recently carbonate of potash.

Sparling Sales Force Increased

Victor J. Bernhard has joined the sales force of R. W. Sparling, of Los Angeles, Calif., in the Chicago territory, assisting Paul R. Kittinger. Mr. Bernhard was connected with the Pacific Tank and Pipe Co. for over twenty years, most of that time as manager of its Los Angeles Branch.

A Traveling Service Department has been added to the Sparling organization and will be handled for the present entirely by C. R. Martina. During his more than twelve years' association with the Sparling organization, Mr. Martina has worked at practically every bench and has had a big part in the development of Sparling water-measuring equipment. He will make his headquarters at the Chicago office, 3104 South Michigan Avenue, and will travel through the East, assisting in installations and the minor adjustments occasionally needed.

W. P. Yant Associated with Mine Safety Appliances

John T. Ryan, Vice-President of the Mine Safety Appliances Co., of Pittsburgh, Pa., has announced that this company has secured the services of William P. Yant, formerly Chief Chemist in the Health Division of the U. S. Bureau of Mines. Effective September 1, Mr. Yant became Director of Research of Mine Safety Appliances Co., with whose activities his own work at the Bureau of Mines has for many years been closely associated.

New Type of Diesel Engine

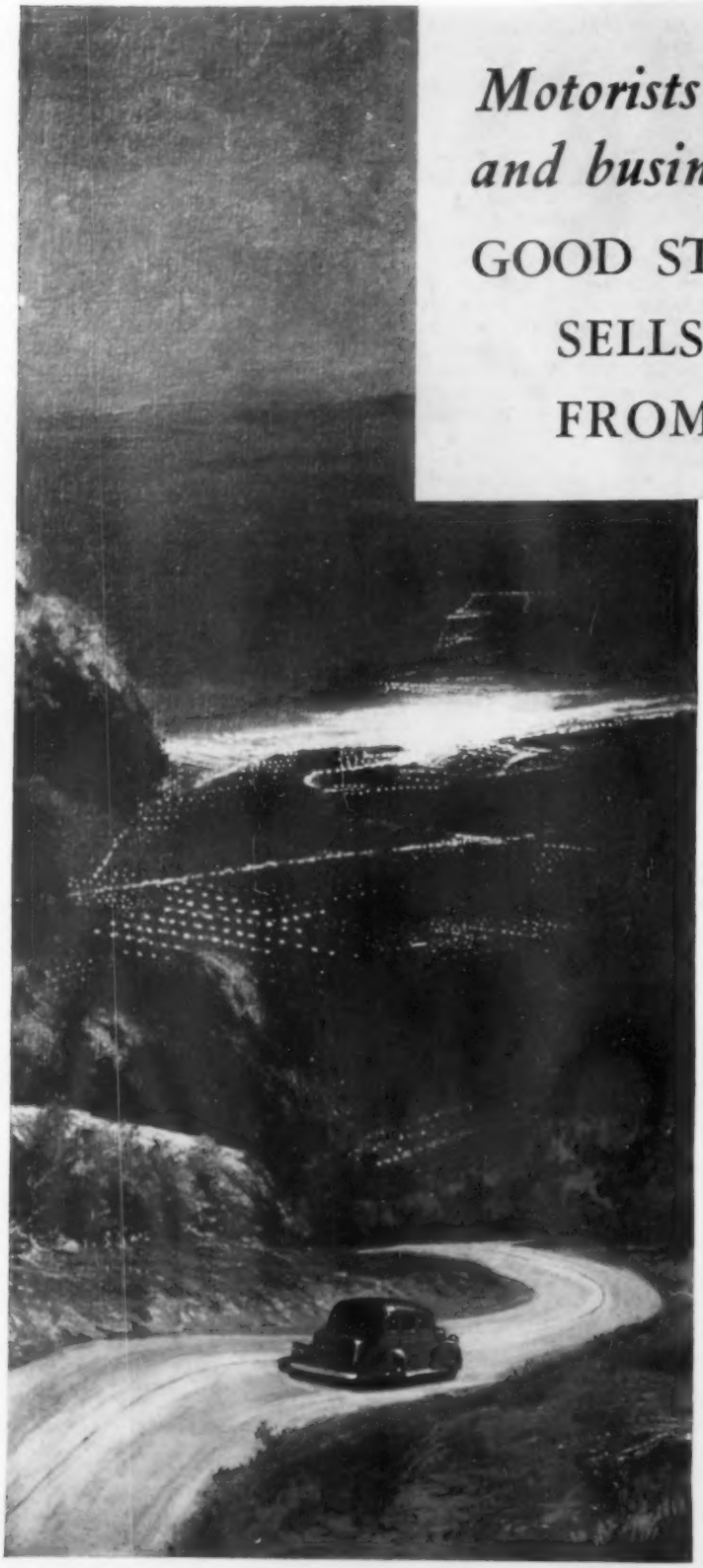
Ingersoll-Rand Co., 11 Broadway, New York, has recently announced its Type S diesel engine. This engine is an improved design which is thoroughly modern in all respects. It is of the vertical, four-cycle, single-acting, solid-injection type, designed to run at medium speeds and built for heavy-duty, continuous service. The fundamental design of this Type S diesel engine is similar to that of the Ingersoll-Rand locomotive engine. Type S engines are made with 3, 4, 5, 6, and 8 cylinders for ratings from 150 to 360 horsepower.

J. W. Turner Dies

James W. Turner, 74 years of age, who had been in the employ of the Pittsburgh Equitable Meter Co., Pittsburgh, Pa., since 1911, died on September 6, 1936, at Danbury, Conn. Mr. Turner was a native of Ireland and, upon coming to this country as a young man, settled in Danbury, where he worked for the local branch of the Union Pacific Tea Co.

THE NEW WALTER SIX-WHEELER CHASSIS MADE BY THE WALTER MOTOR TRUCK CO., RIDGEWOOD, L. I., N. Y.

Voters judge your administration by the good it does



Motorists become shoppers, and business prospers when

GOOD STREET LIGHTING SELLS YOUR CITY FROM MILES AWAY

WHILE driving along the highway at dusk you may have seen a blaze of light off in the distance. Immediately you asked "What town is that?"—you were thinking that it must be a great place to do some shopping, or dance to the music of a good orchestra, or go to the theater. Miles away, that city looked friendly, inviting—it looked busy.

And it is, too, for the citizens of that community reap the rewards of good street lighting not only in reduced crime and accidents but also in the increased volume of trade naturally attracted by a business district that looks alive and alert for business, not boarded up for the night.

The lights in your streets can help your city to enjoy the benefits of increased population, more business, and new industries—help your administration to earn the gratitude of prospering citizens.

Whether it be white-way lighting for downtown, ornamental luminaires for the residential district, or sodium lights for the highway, there is a G-E product ready to meet your exact needs. Its performance is guaranteed by years of specialized research and the reputation of the world's largest manufacturer of electric equipment. Dividends are unfailing when G-E equipment is used to illuminate your city and the roads that lead into it. Investigate the latest achievements in lighting; write to General Electric, Schenectady, New York.

500-194

GENERAL ELECTRIC

Outdoor Lighting

A Section of THE AMERICAN CITY
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Illuminating Engineering Society Highlights

SIX papers of special outdoor lighting interest were presented at the Buffalo meeting of the Illuminating Engineering Society August 31 to September 2. Three of them dealt with highway lighting, which multiplying night traffic has made a major problem. Conscious of the need for satisfactory lighting and the certainty of its increasing provision, the Society this year issued its separate Code of Highway Lighting as a companion piece to its standard Code of Street Lighting which was formulated in 1929 and revised in 1935.

On the subject of costs, the Committee on Street and Highway Lighting says: "Only a small part, if any, of state, county and town budgets is devoted to provisions for highway lighting. The improvement of pavements attracts more traffic, makes for higher speed, and results in greater number and more serious accidents. Highway lighting should be an integral part of highway construction." The new Code applies to traffic ways having not more than four intersections per mile.

Among the projects which Congress has authorized to be carried out with WPA funds, said F. C. Breckenridge of the National Bureau of Standards, is the improvement of airports, including their lighting. This authorization made Government funds available for the purchase of considerable quantities of airport lighting equipment and made it necessary to prepare as complete specifications as the urgent demand for their immediate use would permit.

The Airport Section of the Bureau of Air Commerce was given the responsibility for the preparation of these specifications, which must meet three tests. They must contribute as fully as possible to the safety of air transportation. They must stimulate and not impede the art of aviation lighting. They must deal equitably with all makers of aviation lighting equipment.

In another respect the specifications are unusual. It has been necessary to design them for unusually flexible application. In some cases they may be used for a blanket contract covering the furnishing and installation of a complete airport lighting system ready for use. In other cases they may be used for the purchase of one or two items of equipment with no services at all furnished, all the labor being provided by the WPA. In still other cases it may be desired to contract for certain items of equipment and for the technical supervision necessary for its installation by WPA workers. The specifications have been designed to serve in any of these circumstances.

Use of Refractors and Reflectors

The characteristics of light-controlling equipment, especially refractors and shielding reflectors, were reviewed by Thomas W. Rolph, Chief Engineer of Holophane Co., Newark, Ohio, as abstracted below.

A due regard for the economics of street lighting calls for a high degree of light control. The natural emission of light from the sources available for this service does not, in any case, approximate even remotely the most effective light distribution for the purpose. If streets are to be lighted adequately for safety, vision at night must be of the same general character as vision by day.

Since adequate nearby vision requires uniform horizontal illumination, and adequate distant vision with diffuse surfaces requires uniform horizontal illumination, it is clear that uniform horizontal illumination is a primary requirement for all adequate street and highway lighting.

While provision of approximately uniform horizontal illumination is the solution of a vital part of the street-lighting problem, it is not a complete solution. There remains the problem of providing approximately uniform pavement brightness for distant vision when the pavement is specular. This is largely a question of strategic placement of lamps over the roadway.

The problem of obtaining uniform horizontal illumination is, to a considerable degree, the problem of providing sufficient candlepower directed toward the pavement halfway between luminaires, so as to avoid seriously low illumination values in this region.

There are two known light-directing devices for obtaining concentration of light. These are (a) the lens and (b) the parabolic reflector. All street luminaires approximating the most effective light distribution make use of one or both of these devices. The parabolic reflector may be in the form of two parabolas pointing in opposite directions along the street, or it may be in the form of a bowl-shaped shielding reflector which is a surface of revolution generated by a parabolic contour. The most useful classification of efficient street-lighting equipment is therefore, as follows:

1. Refractors
2. Parabolic reflectors
3. Shielding reflectors

It was not until the Mazda "C" lamp was produced, in 1914, that the refractor came into its own. Then the symmetric bowl refractor was designed and was used only to obtain a high degree of vertical concentration. This refractor was followed two years later by the symmetric dome type, in which both pieces were used to obtain vertical redirection of light. This permitted more redirection of the upward light from the lamp. Such upward light was concentrated into the beam, while light emitted by the lamp below the beam angle was allowed to emerge downward without interception. This type of refractor became most useful inside lightly diffusing ornamental globes.

As street lighting developed, lateral refraction came into the picture again, the trend being emphasized by a growing tendency to mount luminaires at the side of the street. With side mounting, the need of an asymmetric light distribution is greater than with center mounting, because at the side of the street almost

This Will Help You Select Street-lighting Glassware

HERE is a service that will help you — every city official — in selecting street-lighting glassware which will exactly fit your needs. You can examine actual samples of glassware — the attractive appearance of the globes by day, their sparkling beauty at night.

Samples of the glass itself show the rippled finish that prevents dirt-streaking by rain and the laminated structure which produces proper diffusion with no loss in efficiency, at the same time adding resistance to breakage.

There is a sample case like the one here illustrated in a General Electric office near you. In this case are miniature samples of the most popular shapes of glassware. Photographs show installations, manufacturing processes—everything that you will want to know before choosing street-lighting globes.

Take advantage of this service. Arrange to have a street-lighting expert show you one of these cases—present it before the city council, if desirable.

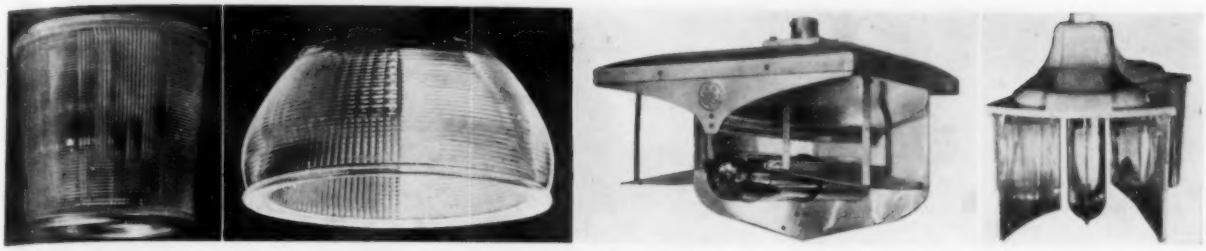
Arrangements can be made through Gleason-Tiebout Glass Company, Brooklyn, New York, or through any General Electric office.

You pay for good street lighting whether you have it or not . . . with inadequate lighting, you pay in accidents, crime, and deaths.

GLEASON-TIEBOUT GLASS COMPANY

99 COMMERCIAL STREET, BROOKLYN, N. Y.

GT-41



LEFT TO RIGHT, FIGS. 1 AND 2, SIDE MOUNTING 8½-INCH REFLECTORS OF 1923 AND 1925; FIGS. 3 AND 4, PARABOLIC LUMINAIRES FOR SODIUM LAMPS

half the downward light is ineffective unless the distribution is asymmetric. Figs. 1 and 2 are typical.

Turning to parabolic reflectors, with the advent of the sodium lamp, a modified form of parabolic construction has been developed for highway lighting. This is shown in Fig. 3. Since the sodium lamp is in the form of a tube, it has a large dimension in one direction and a much smaller dimension at right angles. By placing the tube horizontally, the smaller dimension permits of a considerable degree of vertical concentration by means of a cylindrical parabolic reflector construction.

Fig. 4 shows another parabolic construction for use with the sodium vapor lamp. In this case the lamp is used vertically and the construction is large enough to provide great concentration in both planes. Therefore, at high mounting the light distribution is a good one for highway lighting.

Glare and Spacing

Before describing shielding reflector luminaires, it is well to consider the peculiar advantages and disadvantages of this type of reflector. The shielding reflector grows out of an attempt to reduce glare in street lighting. When light is concentrated strongly up and down the street, it is effectively directed toward portions of the street to be lighted, but it also tends to be directed toward the eyes of users of the street. Thus, extreme concentrations of light at angles close to the horizontal partially defeat their own purpose; they provide the illumination required, but they decrease the ability of the eyes to use this illumination.

Without going into detailed discussion of the subject, it may be stated that there is substantial agreement that seeing ability decreases as the candlepower from light-sources toward the eyes increases, and this effect varies with the size of the angle between this candlepower and the line of vision. The effect is at its maximum when the beam of light coincides with the direction of vision. The effect decreases as the glare source is moved away from the line of vision, and becomes substantially zero when the glare source is about 25 degrees away from the line of vision. Since the direction of vision in street lighting is generally horizontal or somewhat below, this indicates that a street luminaire giving no light above 65 degrees from the vertical would be substantially without glare so far as its effect on ability to see is concerned.

A spacing-height ratio of four, with the proper light distribution for uniform horizontal illumination, will produce an installation almost completely free from any "reduction in ability to see" due to glare. This follows from the fact that the beam candlepower is directed at approximately 63½ degrees, or below the glare limit of 65 degrees.

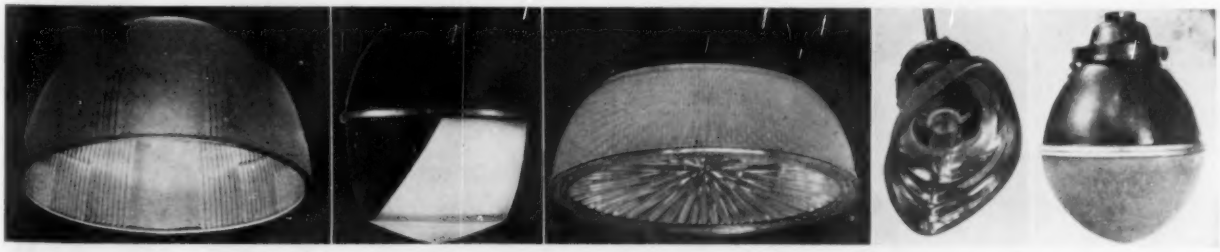
At spacings greater than four times the mounting height, and assuming correct light distribution, there will be some "blinding effect" due to glare. The best present-day street-lighting practice uses a spacing-height ratio of approximately eight and uses high mounting to lessen the effect of glare. This provides for reasonably wide spacing between luminaires and an acceptable cost of installation and operation. *Yet it should be noted that a large proportion of American street-lighting practice is still on the basis of wider spacing than eight times the height. In other words, cities as a whole are not yet sold on the general use of spacing-height ratios as low as eight, in spite of the fact that few, if any, street-lighting engineers today advocate materially greater spacing than this.*

In order to reduce the blinding effect of glare, closer spacing and lower angles of maximum candlepower have, from time to time, been advocated. It is an open question whether the costs of such closer spacings are justified by the degree of glare reduction obtained. Certainly there has never been any acceptance of such higher costs in American street-lighting practice outside of ornamental white-way installations.

At wide spacings and moderately high angles of maximum candlepower, the refractor is one of the most efficient devices available for obtaining the desired light distribution. At closer spacings and with lower angles of maximum candlepower, the shielding reflector is also an efficient light-directing device for obtaining the desired light distribution. Consequently, there has been widespread use of refractors for spacing-height ratios approximating eight and a certain tendency to use reflectors, in the few cases where spacing-height ratios as low as four or five have been attempted. Therefore, shielding reflectors, when used at all, have been associated with the lower spacing-height ratios.

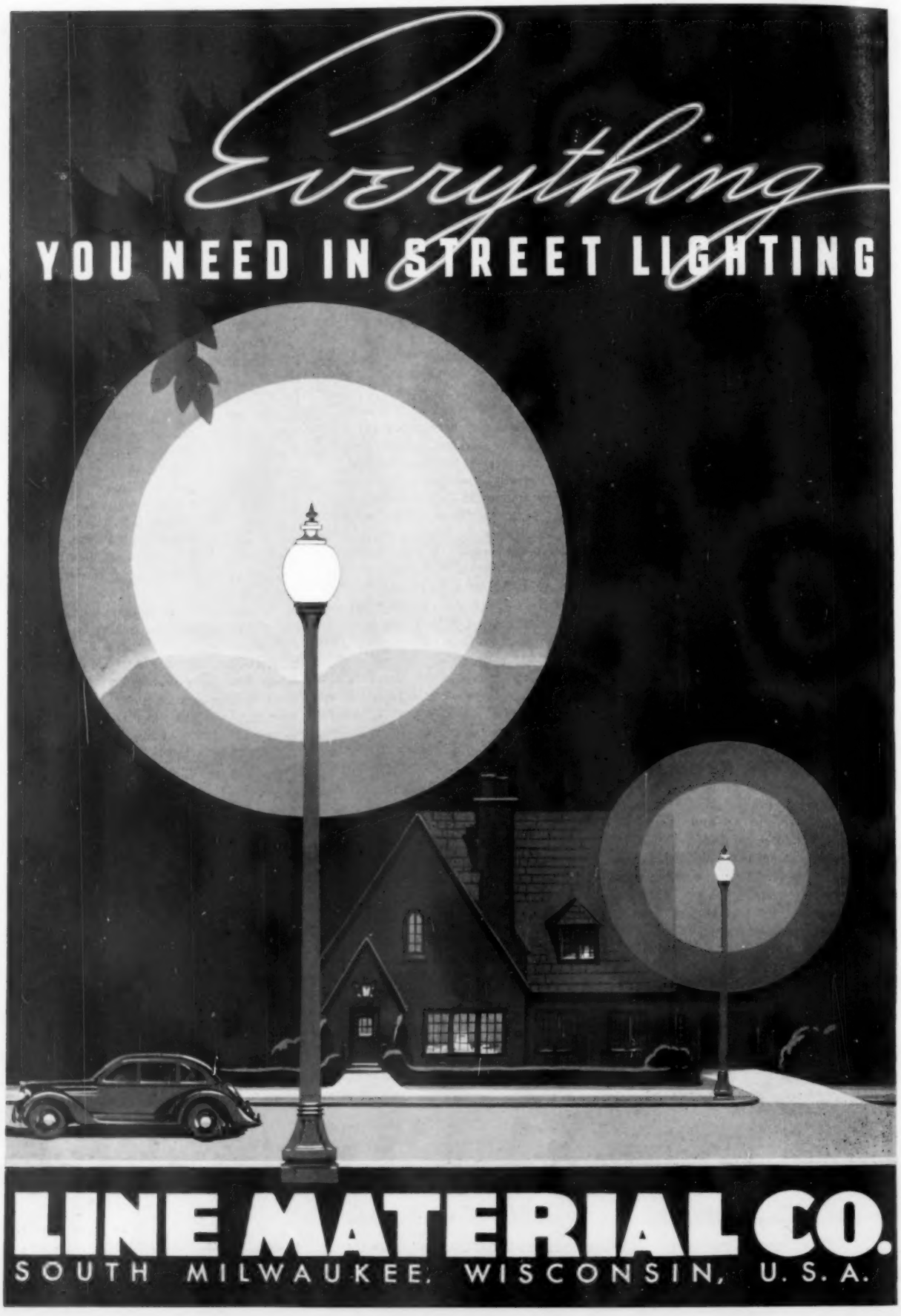
Refractors have a wide field of usefulness and can be applied to all classes of street lighting and all types of streets and highways. They are now generally applied at a spacing-height ratio of eight, which is the ratio recommended in the I. E. S. Code of Street Lighting.

Shielding reflectors offer the possibility of decrease in glare at the cost of closer spacing than has been customary in the past.



EUROPEAN PRISMATIC SILVERED SHIELDING REFLECTORS, AND ALUMINUM SHIELDING REFLECTORS OF UNITED STATES

Fig. 5, France, 1931, 10-inch; Fig. 6, France, 1934, 12-inch; Fig. 7, England, 1933, 11-inch; Fig. 8, "Admiral's Hat," United States, 1936; Fig. 9, "Acorn," United States, 1936


Everything
YOU NEED IN STREET LIGHTING
LINE MATERIAL CO.
SOUTH MILWAUKEE, WISCONSIN, U. S. A.

Biggest Installation of Mercury Incandescents

GRAND ISLAND, Nebr., 19,000 population, is about to have the largest mercury-incandescent street-lighting system in operation in the United States, with 166 combination incandescent-mercury units which replace incandescent lamps in 5-light clusters heretofore in operation in the city's business district. The new lights are staggered six to a block, furnish more light than did their predecessors, and promote safe driving at night.

The mercury-incandescent method of lighting city streets is comparatively new. The first installation was made late in 1934 at Lynn, Mass., where eight lamps were installed in front of the city's new post office. Since that time, various small installations have been made, the largest at Belmont, Mass., where there are forty-four units along residential Concord Avenue.

The mercury-incandescent unit does not differ externally from the usual ornamental street-lighting luminaire; but inside it are a 400-watt mercury lamp and a 200-watt incandescent lamp. The combination of the two types of light emitted by these radically different units, blended within the ornamental fixture, gives a light of a quality that appears to be winning increasing appreciation.

The mercury lamp, used by itself, is an efficient producer of bright, slightly bluish-green white light. The incandescent lamp within the fixture contributes yellow and red for a more balanced spectrum.

The mercury-vapor lamp gives 40 lumens per watt; the incandescent, 17 lumens per watt; the combination, 29 lumens per watt.

Headlights and Fixed Lights

"IT would appear that highways have been designed wholly with regard to safe movement of vehicular traffic by day," says C. A. B. Halvorson, General Electric consulting engineer, "the general assumption being that the lighting requirements can be adequately met by the illumination provided by auto headlights, ter' through a practical demonstration of nals on trucks and buses.

"All objects by day or night are seen in silhouette, perspective, or a combination of both, but the majority of objects on the highway at night are revealed by silhouette vision, regardless of the type of lighting employed. During fogs or mists, a driver's own headlights can be of little use to him, since the fog particles diffuse the light and form an illuminated veil through which he is unable to see any distance.

Public Demand Needed for Much Better Light

One way to win it is to get night accident facts over eloquently, and the new accident meter helps to do this.

THE annual report of the American Society of Municipal Engineers' Street Lighting Committee, under Chairman Paul H. Goodell, at the 1936 Public Works Congress in Toronto, states that "if public acceptance is given to the expansion of rehabilitation programs permitting all obsolete lighting to be displaced in conformity with the I.E.S. code for adequate street lighting, it is reasonable to expect that about 3,500 lives would be saved annually in the cities of the United States. Twice as many more lives would be saved if the major traffic arteries between all cities were provided with suitable types of highway lighting."

The principal deficiency, says the report, seems to lie in the apparent need of a more concentrated public demand for improved lighting. Noteworthy among the methods of public education has been the development of the "Accident Meter," which registers motor-vehicle accidents, and the estimated economic losses therefrom, at the average rate of occurrence.

Says the report: "Obviously the three essential requirements for improved safety are careful drivers, safe cars, and safe thoroughfares throughout the full twenty-four hours of the day and during the entire life of both vehicles and roads. The 'Accident Meter' display contains a complete pictorial demonstration of this approach to safety and has been one of the most successful means of securing concerted action in local safety campaigns.

"Since the problem of visibility as an adjunct of safety is probably the least understood, because seeing is so often taken for granted, the 'Traffic Safety Analyzer' has been developed to supplement the story told by the 'Accident Meter" through a practical demonstration of the deficiency in prevailing visibility conditions, together with methods for employing illumination more effectively in elimination of night accident hazards."

THIS DEVICE SHOWS ACCIDENT FREQUENCY AND IMPRESSES THE PUBLIC WITH THE HIGH COST OF DARK HIGHWAYS

The American City Professional Service Directory

ALBRIGHT & FRIEL, INC.
Consulting Engineers
Chester E. Albright Francis S. Friel
Water Supply and Purification
Sewerage and Sewage Disposal
Industrial Waste and Refuse Disposal
Investigations Valuations Reports
246 South Fifteenth Street
Philadelphia, Penna.

Waterweeds Removed
easily and effectively from any lake, pond, reservoir, river, etc., for Water Supply, Parks, etc.
Write for particulars.
ASCHERT BROS.
Box 155 La Canada, Calif.

Chester, Campbell, Davis & Bankson
The Chester Engineers
Water Supply and Purification, Sewerage and Sewage Treatment. Power Development and Applications, Valuations and Rates.
150 Seventh St., Pittsburgh, Pa.

ELECTRICAL TESTING LABORATORIES
Electrical, Photometrical and Mechanical and Chemical Tests. Factory Inspections of Electrical Apparatus and Supplies.
80th St. and East End Ave., New York, N. Y.

ALVORD, BURDICK & HOWSON
John W. Alvord — Chas. B. Burdick
Donald H. Maxwell — Louis R. Howson
Water Works — Sewage Disposal
Water Purification — Drainage
Flood Relief — Appraisals
Sewerage — Power Generation
CIVIC OPERA BLDG., CHICAGO, ILL.

BARKER & WHEELER
36 State Street — Albany, N. Y.
11 Park Place — New York City
Water Supply — Public Utility and Industrial valuations
Sewerage — and Rates
Sewage Disposal — Power

Chicago Testing Laboratory
Incorporated
affiliated Chicago Paving Lab., Inc.
Hugh W. Skidmore — Gene Abson
MATERIALS — PROCESSES — STRUCTURES
Consultation, Inspection, Testing, Design, Research, Investigation
536 Lake Shore Drive — Chicago

FAY, SPOFFORD and THORNDIKE
Consulting Engineers
Port Development—Bridges—Water Supply—Drainage—Sewerage—Fire Prevention
11 Beacon St. — Boston

AMBURSEN CONSTRUCTION CO., INC.
Engineer-Constructors
Ambursen Dams
295 Madison Avenue, New York
Alexander Building, San Francisco

Barstow & LeFeber, Inc.
Sanitary Engineers
E. D. Barstow — Alfred LeFeber
Specializing in Water Supply, Sewerage and Drainage Works
Sanitary Laboratory
31 N. Summit St., Akron, Ohio
609 American Bldg., Cincinnati, O.

THE J. M. CLEMINSHAW CO.
Appraisal Engineers
TAX EQUALIZATION SERVICE
Union Trust Bldg., Cleveland, O.
175 Fifth Avenue, New York City

THE WILLIAM T. FIELD ENGINEERS, INC.
Consulting Engineers
William T. Field — Arthur H. Emerson
Sewerage Systems and Treatment, Water Supply and Purification, Investications, Appraisals, Design, Supervision, Laboratory
Flower Bldg., Watertown, N. Y.

The American Public Utilities Bureau
Organized to assist municipalities and public groups in utility valuations, rates, franchises, accounting, and surveys.
JOHN BAUER, PhD., Director
280 Broadway — New York City

BLACK & VEATCH
Consulting Engineers
Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations and Reports.
4706 Broadway, Kansas City, Mo.

WILLIAM R. CONARD
BURLINGTON, N. J.
Inspections and Tests of Materials, Reports, Appraisals, Designs, Specifications.

WALTER H. FLOOD & CO.
Chemical Engineers
Paving and Engineering Materials—Inspections—Reports—Specifications—Physical and Chemical Tests—Design and Control of Asphalt and Concrete Mixtures.
822 E. 42nd St., Chicago, Ill. — 321 Daniel Bldg., Jackson, Miss.

MUNICIPAL INCINERATORS and PLANTS
THE AMSLER-MORTON CO.
Industrial Engineers and Contractors
Fulton Building, Pittsburgh, Pa.

Burns & McDonnell Engr. Co.
Consulting Engineers
Water Works, Sewerage, Lighting, Appraisals, Rate Investigations.
Kansas City, Mo. 107 W. Linwood Blvd.
Cincinnati, Ohio, 710 Transportation Bldg.
Albany, N. Y., Home Savings Bank Bldg.

Consoer, Townsend & Quinlan
Water Supply—Sewerage—Flood Control and Drainage—Bridges—Ornamental Street Lighting—Paving—Light and Power Plants. Appraisals.
Engineering Bldg. — Chicago

FULLER AND EVERETT
Civil, Hydraulic and Sanitary Engineers
W. B. Fuller — C. M. Everett
WATER SUPPLY and SEWERAGE
22 E. 40th St. — New York

E. T. ARCHER & CO.
Consulting Engineers
Steam and Hydraulic Power Plants, Water Sewerage, Paving, Roads, Appraisals, Testimony, Reports.
New England Bldg. — City Bank Bldg.
Kansas City, Mo. — Shreveport, La.

JAMES M. CAIRD
Assoc. Am. Soc. C. E.
CHEMIST and BACTERIOLOGIST
OFFICE AND LABORATORY
Cannon Building, Troy, N. Y.
Water Analysis and Tests of Filter Plants

JACOB L. CRANE, JR.
Municipal Development Engineers
CITY AND TOWN PLANNING ZONING
Municipal Utilities
Land Subdivisions. — Housing
Wrigley Building, 400 N. Michigan Ave.
CHICAGO

FULLER & McCLINTOCK
Engineers
F. G. Cunningham — C. A. Emerson, Jr.
Elmer G. Manahan — Ernest W. Whitlock
H. K. Gatley
Sewage Treatment, Sewers, Waterworks, Purification, Drainage, Waste Disposal. Valuations.
11 Park Place — New York

Air Maps 1c to 10c per Acre
Aerial Surveys in Three Dimensions for Engineers—Architects—Financiers—Surveyors Contractors to Federal—State—County—City Depts.—Large Corporations
Air Maps 1c to 10c per Acre
ABRAMS AERIAL SURVEY CORPORATION
LANSING — MICHIGAN
Air Mapping Since 1922
Send for Booklet—"Air Maps and How to Use Them"—Submit Projects for Prices

Gascoigne, George B.
Consulting Engineer
W. L. Havens — A. A. Burger
F. W. Jones — F. C. Tolles
Sewerage and Sewage Disposal
Water Supply and Purification
Treatment of Industrial Wastes.
Cleveland, — Leader Building

THE PITOMETER COMPANY
Engineers
Water Waste Surveys — *Trunk Main Surveys* — *Water Distribution Studies*
Penstock Gaugings
52 Church Street — New York

Mortimer M. Gibbons
Sanitary Chemist
Chemical and Bacteriological Analyses of Water, Sewage and Industrial Wastes, Supervision of Water and Sewage Treatment Plants.
961 Frelinghuysen Avenue
Newark, N. J.

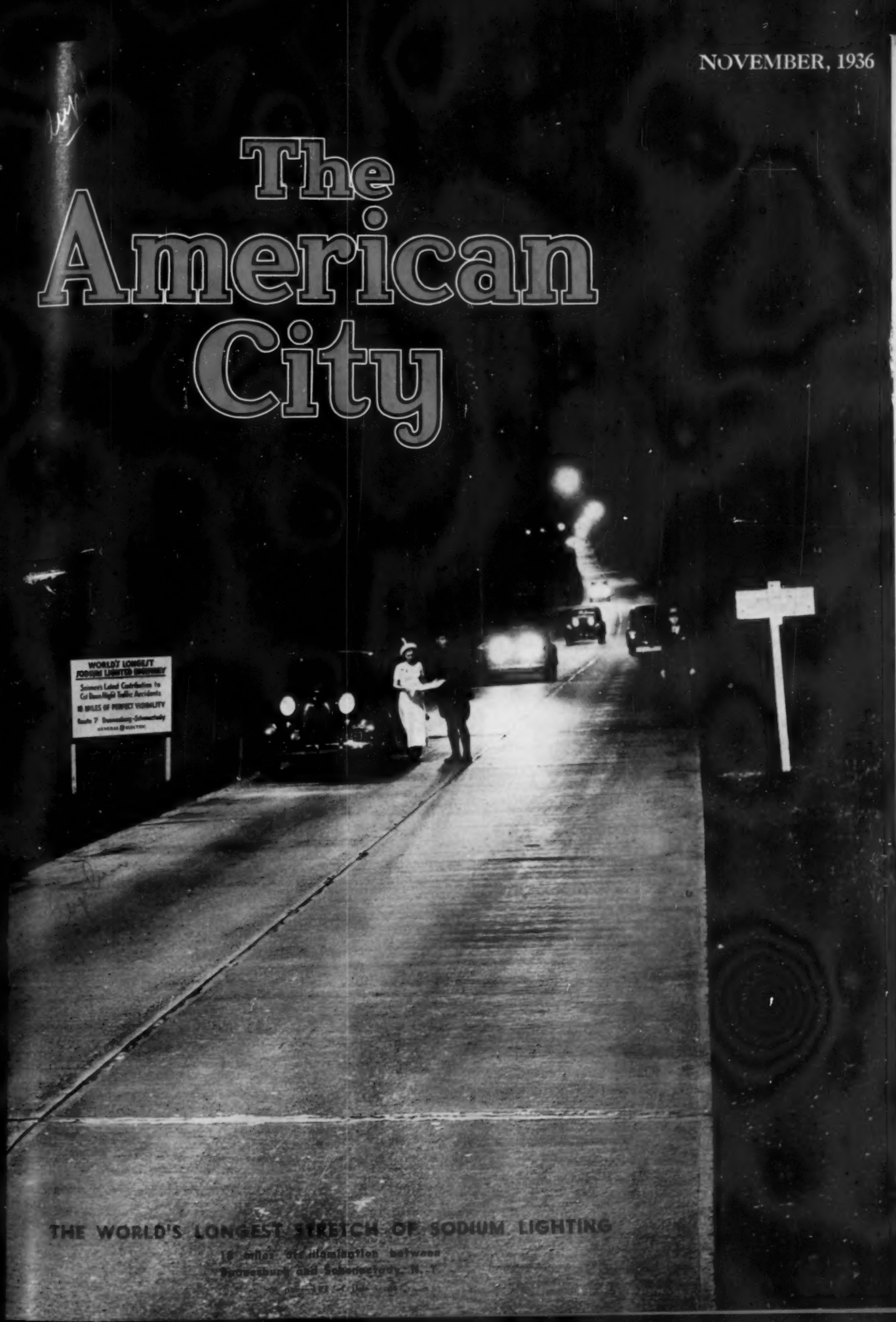
"WHO'S WHO" and "WHAT'S WHAT"

City departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work." On pages 19, 20, 22 will be found another equally reliable listing, telling "What's What" in municipal equipment. Make it a practice to check over these pages every month, writing for free literature on any items that interest you.

CHANGED YOUR ADDRESS?
If so, please notify the publishers as we are anxious to have your card in this Directory, correct. Thank you.

NOVEMBER, 1936

The American City



THE WORLD'S LONGEST STRETCH OF SODIUM LIGHTING

18 miles of illumination between
Rensselaer and Schenectady, N. Y.